ROLE OF MUSEUM EDUCATION FOR ARCHAEOLOGICAL LEARNING IN INDIA

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Date: 20-09-2019

CERTIFICATE

This is to certify that the thesis entitled **Role of Museum Education for Archaeological Learning in India** incorporates the results of the original research work carried out by Ms. Suruchika Chawla under my supervision. There is no plagiarism and any other Academic dishonesty and work has not been submitted for the award of any other Degree/Diploma of The Maharaja Sayajirao University of Baroda, Vadodara or to any other University/ Institution as the case may be. The indebtedness to other works has been duly acknowledged at relevant places.

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DECLARATION

I hereby declare that all the information in the thesis entitled **Role of Museum Education for Archaeological Learning in India** has been obtained and presented in accordance with the academic rules and ethical conduct. To the best of my knowledge no part of this thesis has been submitted for any Degree or Diploma to this University or any other University or Institute. Any errors in fact or interpretation on this thesis are purely the fault of the researcher.

20-09-2019 **Suruchika Chawla**

“You can teach a student a lesson for a day; but if you can teach him to learn by creating curiosity, he will continue the learning process as long as he lives.”

Clay P. Bedford

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Date: 20-09-2019

CERTIFICATE

This is to certify that in accordance with fulfilment of thesis submission guidelines; Ms. Suruchika Chawla has published joint paper with me as PhD supervisor in the journal listed in UGC CARE Reference List (weblink- https://www.ugc.ac.in/journallist/) Group B. Publication details- Chawla, Suruchika and Ambika Patel (2017), *Terracotta Toy Artefacts of Harappan Culture: A Medium of Learning for Children*, Heritage: Journal of Multidisciplinary Studies in Archaeology 5, ISSN No. 2347-5463, University of Kerala, page no. 331-342 (http://www.heritageuniversityofkerala.com/CurrentIssue.aspx?VID=5#). The reprint is attached along with the thesis.

Prof. Ambika Bipin Patel
PhD Supervisor

SUMMARY

ROLE OF MUSEUM EDUCATION FOR ARCHAEOLOGICAL LEARNING IN INDIA

The research thesis is an outcome of the effort by the researcher to know how the archaeological collections housed in various museums across India could be used as a source of education especially learning about culture and heritage. Museums can be rightly said as adjuncts to formal educational institutions that cover every possible field of knowledge through its myriad collections and archaeology being no exception to it. Museums have the potential to bring change in educational inputs and supplements in the country which may aid in overall development of children for enhancing knowledge about cultural wealth.

The development of museums in India dates as long back as 1784 with the inception of Asiatic Society of Bengal. Subsequently in 1814 it was established as the first museum of India dealing with archaeology, ethnology and technology. It was only since 1861, in formation of Archaeological Survey of India that archaeology came to the fore in the museum. It is evident from the foregoing that present-day India has different types of archaeological museums, controlled and financed by different categories of administrative bodies ranging from the Central Government to temple- committees. There has been a majority of archaeological collection across museums of India as nation has rich past dated almost 5000 years in antiquity that comprise of artefacts from almost every part of country.

The objectives of research were to estimate the presentation of archaeological heritage in museums and its current utilization as a source of education. The study emphasised on effective learning experiences suiting to the collection of selected museums in India and to see the interactive methods that are employed to attract different segments of visitors towards museums with archaeological collections. Survey of selected/representative museums of different administrative setups, was done for research. This generated data related to the existing potential of the museums and wherever there is absence of regular programs, the best possible use of collection for the learning purpose has been explored and suggested. The practical outcomes achieved or activities executed on the basis of survey, aided in checking the effectiveness of display and collection.

Chapters were formulated as a series of connecting links initiating from chapter one that focused on the aspect of museum as a resource centre for archaeological learning. The research tools and data collected were put into chapter two that emphasised on the collection surveyed and summary of sources and services available at different museums. The third chapter presents empirical case studies conducted by researcher at national & regional level museums and non-governmental organizations in India. Chapter four is an overview of archaeological collection in selected museums of India where in an effort was made to survey and showcase the vastness of regional collections and highlighting the museums' strength to formulate strategies to promote and popularise displays. The final chapter was based on discussion on findings of the study and conclusion of overall works conducted by researcher.

The research is an effort to emphasise on the inclusion of archaeology as a significant field of study at school level. The youth are enthusiastic to participate and learn if they get a hands on approach to see, touch, experience, interpret object at their own time and in their own comfort zone. Children learn through experiences which last a lifetime. Sensitizing towards archaeology should be developed from this stage when they are in schools. Museums in India have collections that hold stories which reflect the 5000 year old past of this region. Study of land and people, food, clothing, shelter, animals, beliefs and values all reflect the continuity of traditions from past to present. The present generation may even adopt a site, with initiative of local authority or school, and be promoter of the significant aspects of that region. This creates a snowball effect for future generations, as many museums and collection is under threat, and may be lost if not properly preserved or taken care of. Archaeology is the only surviving tool that may aid in preserving this invaluable heritage for posterity. Research was an initiative that showed effectiveness of practical participatory approach in developing sensitization towards archaeology even at school level.

The suggestions, resource pack and activities executed or suggested through this research is an initiative that may be replicated in every museum in the country that has archaeological collection. As rightly quoted by Winston Churchill that "A nation that forgets past has no future". The lessons hidden in mysteries of past can be learnt and explored through archaeology and this was noteworthy aim for current research study.

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SYNOPSIS

ROLE OF MUSEUM EDUCATION FOR ARCHAEOLOGICAL LEARNING IN INDIA

Introduction

The original meaning of the word museum was 'a place of contemplation, a philosophical institution, or a temple of Muses' (Talboys 1996). In historical perspective, the origin of museums is founded as the intellectual approach of the Renaissance (14^{th}- 16^{th} Century AD) (Roy 2006). The first Museum Act of 1845 was established by the British Parliament while the museums began to appear from early 17^{th} Century AD. Museums at Salford, Warrington, Liverpool etc. were the earliest examples of this Act. The Act was repealed later. As there was phenomenal growth in creation of great museums throughout the world, India as a developing nation was making its way for museum development. Origin and development of museum movement in India is near about two hundred years old and Sir William Jones and Dr. Nathaniel Wallich were considered as the pioneers of the museum movement in India since 1784 (Roy 2006). Towards the end of the British rule, India had shown the development of archaeological museums (Roy 2006). In the post – independent period, Government of India adopted a new policy where the museum has been treated as a centre of education with special reference to visual education (Roy 2006). In present scenario India as a fast growing economy has numerous museums and learning centres which take the initiative to make its people aware of their rich past and its unique culture & heritage. Today there are almost 833 museums in India (INTACH 2013 report-NDMA 2017) belonging to almost 54 categories (NDMA 2017) pertaining to themes of Science and Technology, Health, Agriculture, Geology, Natural history, Art, Archaeology and Anthropology etc.

Archaeological collection occupies the major part of majority of museum collections worldwide. These collections enable the museums to act as vital

resource centre to disseminate the knowledge and understanding about the past and culture to the society. Archaeological heritage as we know is the inherited past material culture which our forefathers left behind to make us realize their lifestyles and their messages that are to be learnt and understood in order to create a balance between a glorious past and a brighter future. Developing countries have had their own civilizations and they have contributed much to man's knowledge which the young should know as the history and accept the challenge to emulate it (UNESCO 1973). Archaeological objects contain a context of association when unearthed, which is communicated when they are stored or displayed in a museum. Archaeology embraces many other academic disciplines and sources in attempting to understand past cultures. These range from biology through geology to architecture (Grant et al. 2008).

Archaeology underwent accelerated growth after 1900, so that today virtually every country in the world operates some form of state- financed protection of ancient monuments, as well as supporting research into the subject in public universities and museums (Greene 2003). The concept of building museums near archaeological sites and ancient monuments is recorded by Hargreaves (1936) – "it has been the policy of the Government of India to keep the small and movable antiquities, recovered from the ancient sites, in close association with the remains to which they belong, so that they may be studied amid their natural surroundings and not lose focus by being transported". A site is a defined, open area that is the location of a place or event of historical or social significance containing physical remains of interest (Talboys 1996). A separate Museum Branch in Archaeological Survey of India (ASI) was created in 1946 by Sir Mortimer Wheeler. After the independence, there was a spurt in the growth of site museums and at present there are 45 site museums under the control of ASI (Raj T 2015). To get the actual number of total archaeological collections, kept at various pockets of India, under the custody of innumerable types of stake holders is a rigorous task. But one can track the collection in the national museums though they are mixed collection; site museums of Archaeological Survey of India; museums of state departments; and

University Museums and small department museums located within universities in various parts of the country.

In the past few years, museums have become actively engaged as organizations of promoting heritage and cultural diversity of India. There are studies being conducted on educational benefits and effectiveness of programs that relate to school visits or young visitors, who visit the museums, and related heritage centres which complement the knowledge gained prior to their visits. The informal teaching - learning process that happens inside the museum is an instrument of active participation and long term cognitive development for young generations who are ultimately the custodians of our heritage. Majority of the multipurpose museums in India started realizing the potential of archaeological collections and started communicating effectively through those collections. Over the years, archaeological site museums in India have changed considerably as well. Earlier site museums were only used for storing and displaying of objects but now these museums have become a place of edutainment which comprises both educational and entertainment activities. Examples of archaeological museums at Agra, Thanesar, Ropar, Lothal, Chennai etc. can be put forth who had been engaged with involving various student organisations (and NGOs) to conduct educational tours and activities at their premises.

Every country has formal institutions of learning, but learning in a museum is altogether a different experience. Museums widen the periphery of the formal education and offer different ways of learning, enjoying and discussing (Boylan/ICOM 2004). Museums add special values to the formal school and college education system, as part of the informal sector of education. Scholars like Nigam (1982) opine that, the foremost function of a modern museum is, therefore to utilise the objects of the past as tools to generate knowledge and thereby enlighten the minds of the public. Agrawala (1973) was of the opinion that museum has to radiate knowledge, light and values of a cultured life. Museum's role in the present scenario is to educate the masses but not to duplicate school or university teaching thereby maintaining their sanctity as a non formal institution

of learning. In preserving, conserving and keeping artefacts in dedicated places, museums act as a means of storing national, cultural and collective memories, which can then be passed from generation to generation (Talboys 1996). It is to be remembered that the museum is a culture disseminating national entity (Agrawala 1973). Most museum work tends to be at the active end of the scale and is, therefore, likely to make more of an impact than text based classroom work (Talboys 1996). Museums contain, or are, the real thing and although the written word may feature during any visit it is the artefact that dominates. Museums are excellent centres of informal education and provide a visual aid as well as pool of information that cannot be filled in books (Olofsson 1979). Museums are undeniably centres for learning. These unique aspects are the added advantages of any museum display or program, and involvement in a participatory exhibit or program enhances this experience much further. A well prepared visit is fully integrated with classroom work and skills, and allows pupils to participate before, during and after (Talboys 1996). It must also be clearly understood that museum education is different from the theoretical instructions given in schools and colleges as in a museum; it is the object which speak to the visitors (Nigam 1982). Edutainment is a better term that may be used in the context of museum programs imparted to various kinds of visitors.

School is a formal institution of education that revolves around the textbooks and its fascinating contents. Children go through lecture series, work book activities, project submissions, and now a day's smart class activity to fulfil their urge to be called as a scholar. Education provided in schools being formal mode of teaching-learning phenomena has classroom pattern and syllabus criteria to dwell upon, also initiates this process of learning but makes heritage and culture a 2-D experience only. Children sometimes feel that the textbook and internet is the ultimate source of knowledge beyond which the education cannot be explored. The formal education literature has suggested for decades that students would learn more if they were able to be involved in meaningful physical activity (Hein 1998). Although the school education puts a lot of efforts in the process of making children aware of the facts and facets of archaeology as it is taught as a part of

teaching history but if one looks at the sector of higher education, there are only few universities that teach archaeology as a taught course.

Major Objectives of the current research

1. To examine the importance of archaeology as a discipline in the field of museum and museum education focusing India. Estimating museums' presentation of archaeological heritage and its current utilization as a source of education was studied.

2. To construct effective learning experiences suiting to the collection of selected museums in India. This will help to involve and make the visitors acquainted with the actual collection through interactive methods that are employed to attract different segments of visitors towards museums with archaeological collections.

3. The present study aims to highlight the existing programs and tapping potential of archaeological collection in various museums of national and regional stature in India that are open to the concept of educating visitors through their collections. Although, if there are no regular active programs, the best possible use of collection for the learning purpose has been explored and suggested.

4. To highlight that museums offer young learners experience desirable for their development. The methods involved must have the potential to involve multiple senses in a discovery learning-format, as the school children or youth from institutions of formal learning often don't get the opportunity to experience an archaeological excavation, and how a museum acquired its collection or displayed the same. This research work focuses on the presentation of the collections in such a way that relevance of archaeology gets enhanced in minds of children through museum. The research tools and methods comprise of the practical approach using self-designed activities.

5. To gather primary data for the aforesaid objectives, the methodology of using basic tools of research such as survey forms, observation of workshops and questionnaires were used. Practical sessions for school children were conducted in order to involve children in multisensory learning process. Worksheets and workshops have been specially designed to focus on archaeological collection of different institutions. Also conducted heritage site tours and museum visits as a connecting link to generate effective outcomes. This qualitative learning database emphasises on present scenario of museums in India as a component of education and their impact on curriculum supplement to archaeology.

6. To study the activities that may aid in enhancing the experience of archaeological learning. These can be both planned and unplanned activity and may even be conducted by non-government organisation for the participants.

7. Few comparisons with museums and archaeological sites from international context that offer programs on archaeology will also be discussed in order to add an additional support to the Indian context. Archaeological sites in United Kingdom, namely Sutton Hoo and Roman Bath, have been active in conducting programs on *in situ* sites that attract variety of visitors and effectively disseminate the knowledge about people of the past and their lifestyle.

Outline of thesis

Chapter 1: Introduction – Museum as a Resource Centre for Archaeological Learning

An up-to date museum prefers to make the visit of the school group a truly educational experience, not merely a holiday from classroom routine (Burcaw 1983). Museums in India are not much into catering to all variety of audiences

throughout the year, they rather focus on specific events or on activities during holidays. The strategies that were applied were for the myriad audience catering phenomena, either through activities developed, modifying existing approaches of display, gel the community with collection or marketing strategies that contain the crux of exhibition. This chapter of the present research is more into using these strategies and applying them for generating wider audiences and also cater the young learners in order to provide those enhanced learning experiences. The linkages that are then formed or speculated can be proved by set of valid remarks and authentic approaches. Education phenomenon is as unpredictable as the human nature, one cannot decide a single method of dissemination of knowledge, so one have to be open to every little bit of information or idea that one can collect to apply it in practice as effective method. This chapter includes the description and scope of work and highlights the unique aspect of archaeology as a subject that can be learnt through collection in museums of India as well.

Chapter 2: Research tools and Data Collection

First part of this chapter will focus on the process of developing tools for research by observing the primary and secondary sources from various museums. They are as follows:

- Resources evaluation: How the available resources (data, money, manpower) in a particular museum can be effectively used for developing educational programs/ worksheets to communicate/promote archaeology as a subject.

- Pattern of Museum Visits: Brief on data of types of visits to museum by school children such as casual, pre-planned in relation to curriculum requirements and knowledge of teachers assisting the children, active participation of both in programmes offered by museums, was collected and studied.

- Surveys & Questionnaires: Survey and interviews of school children, their teachers and museum staff (educators) that were done after seeing the feedback

forms and other available information in the museums itself. Accordingly the survey sheets and activity sheets were developed for case studies.

- Review of Museum publications and other printed and digital material records: Annual reports of museums also act as significant source of secondary data and similarly other museum publications or literature provided to children by museums. Publications, its content value and utility for imparting education related to curriculum of school (basically on guidelines of NCERT or central board in India) were carefully surveyed to develop effective activities based to supplement curriculum. Publications online and literature available for education through museums to school children related to their curriculum and purpose of study (Humanities i.e. social science) in India (for senior secondary onwards) were carefully surveyed and studied.

Data of diverse collection of museums both, government & private, the literature surveys and personal observations, was collected for research.

Apart from national, state and local level museums, there are many individual organizations that conduct open endeavour for popularizing archaeological heritage through medium of museums and its collections, for various age groups. The second part of this chapter discusses about few of the popular organisations namely, The Sharma Center for Heritage Education (Chennai), Heritage Lab (Chandigarh), Rereeti (Bangalore), Nizamuddin Urban Renewal Initiative (New Delhi), Heritage Trust (Vadodara), ITIHAAS (New Delhi) etc. Organizations such as INTACH and Sahapedia (Delhi based) conduct heritage walks at various heritage sites and also in the museums within Delhi and outside. These organizations also conduct workshops inside the premises of National Museum, New Delhi. INTACH is active in other regions and published significant books on heritage education (including archaeology). Sahapedia is an open resource which acts as an online (digital) database of tangible and intangible heritage including archaeologically significant sites and collections.

This chapter will emphasize on need of policy drafting regarding educational role of cultural organisations for nation.

Chapter 3: Empirical Case studies

Based on the data collection, literature survey, the research tools were designed. Accordingly museums at various levels of administration (national, regional) were chosen for empirical studies. The present chapter will discuss the practical activities conducted by researcher as a resource person on the basis of available resources and type of audience, in selected museums. The activities were conducted in museums, on site, in non – government setup and other school or government agencies.

National Level case studies will include the following museums,

- **National Museum, New Delhi** has a permanent gallery on Harappa and other archaeological galleries and conduct series of programs to engage children with museum exhibits. It has hands on session, gallery walks and activity sessions apart from special lectures and movie shows.

- **Allahabad Museum** conducts various summer vacation programs, children week programs, regular screening of documentaries, special lectures, and workshops or programs that directly relate to galleries in the museum. They have concept of Heritage corners that is popular in schools.

- **National Science centre** at Delhi conducts science drama, popular lectures, quiz shows, debates, science fair etc. at city, state, national level and gives opportunities to make children (especially schools) to participate and visit an informal institution of learning. They have specially designed galleries that have portions of heritage education. They also have a Museobus as well that was recorded during this study.

Regional Level

- **Archaeological Site Museum visits of children at – (a) Lothal and (b) Dholavira.** These museums near the partly reconstructed and preserved sites conduct programs related to past civilizations of India and interpreting the site so as to make children understand their significance in Indian archaeology.

- **Department Museum of Archaeology**- The Maharaja Sayajirao University, Baroda, has frequent visits of school children where students can come for a planned visit and have a look at galleries, artefacts and documentaries as per education requirement.

- **Punjab State War Heroes' Memorial and Museum, Amritsar** has a collection beginning from earliest civilization and history of India then connecting to Sikh heritage. As a part of educational summer program, an activity was conducted of seal replica making, to make children aware of the earliest people and their material culture.

- **Activity conducted at Navlakhi Vav, Vadodara –** An activity focusing on water conservation connecting heritage like stepwells was conducted as a part of program organized by Heritage Trust, Vadodara.

- **Activity conducted in non- government set up – Gurugram-** In a non government, fair called Hichki Mela, open to all activities related to prehistory, world civilizations and Indus valley pottery and seals, was organized. This resulted in creating awareness as well as a kind of observation to gather information of interests of children in informal set up.

Chapter 4: Overview of Archaeological Collection in Museums of India

The chapter focuses on a brief compilation of statistical data on museums of India (that were personally visited as a researcher) to experience, observe and understand the archaeological collection's galleries starting from Pre-historic, Proto-historic and early historic, sculpture and other archaeological collection. Description about the Archaeological Site museums in India and their effectiveness through camps, site visits, seminars and publication etc. will be discussed.

Archaeological museums which conduct drawing or poster making competitions or music and theatrical performances to encourage youth to join hands in learning about archaeological findings and their importance were recorded. University departmental museums that provide information on regional and national level about archaeological findings/ sources were recorded and will be discussed in this chapter. Museums at national level such as in Mumbai, Kolkata, Hyderabad or Chennai, and museums and sites in states of Andhra Pradesh, Uttar Pradesh (Sarnath), Punjab (Amritsar), Goa, Gujarat such as at Amreli, Watson Museum (Rajkot), Kachchh (Bhuj), Jamnagar, Junagadh etc., that has rich archaeological collection and organizes visits for school children (on demand) were visited for data collection and study.

Chapter 5: Discussion and Conclusion

This chapter will cover the data that is concluded as the outcome/worksheets that were collected from museums and participants of various activities. Practical application of the tools developed and their outcomes is summarised. Also illustrations (photos of museum workshops/ programs conducted by them), samples of questionnaire or interview sheets (for staff) and worksheets and other aids (for students- loan kit, replicas, photographs, mobile van) that were accomplished related to a particular collection in the museum will be summarised. This chapter will include the –

- findings of the study
- suggestions to improve the situation of museum education in Indian museums.

It will further include the summary of comments and remarks of the case studies of museums, interviews of educators & staff involved in communicating archaeology as learning discipline. This chapter will discuss the opportunities that evolve in planning an effective knowledge exchange program between museums and formal learning organisations. Chapter will also provide necessity and significance of modifying existing cultural policies so as to inculcate a sense of knowledge enhancement and professional boost for museums. This study tends to seek exploration of innovative programs and human resource development by the museums focusing the field of archaeology.

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STATEMENT – I

(Statement showing the particulars, on which the work is based, the discovery of new facts and of new relationships between facts observed by others and how the work tends to help the general advancement of knowledge.)

The thesis outlines various aspects of museum education focusing archaeological materials of museums of India. It was observed that there are few museums that have dedicated education departments to cater and disseminate knowledge among youth, especially children. This study aims to estimate the interdisciplinary relationship between museums and schools in order to benefit educational cooperation and boost the professional growth for the popularisation of the subject of archaeology. The suggestions may result in expansion of opportunities and enhancing quality of programs offered by the museums.

Following are the major findings of the work:

1. There are cultural policies in India that determine various roles of organisations, but museum's potential as a cultural organisation to spread knowledge has not been tapped well. In order to give museum a significant status as an institution of learning, an adequate policy is need of hour. This research is in correlation with the existing cultural policies however preparation of educational policies for museum education needs special attention of government.

2. To facilitate archaeology as a source of museum education tool at national level; innovative models need to be implemented by the museums so as to complement the school curriculum, and the schools need to add the element of museum education as a supplementary element to their curriculum schedule.

3. One of the major objectives of the research work was to study the effect of object oriented teaching learning process; which was found true and significant in museum education patterns.

4. The study is also a systematic effort to determine the outcomes of hands on experiences through workshops in order to explore the impact for future progress in the field of archaeological learning in India.

5. It was also found that children lack awareness about archaeology at school level. Using museum as a significant source to educate about facets of archaeology was studied to show the enhanced level of understanding. At the school level, the importance and role of heritage needs to be emphasised along with all aspects related to the past and its importance in the present context of modern societies and the conflicts. The idea of appreciating the past to understand the present is much important than merely making the students aware about archaeology.

6. Effectiveness of the study that might aid in future planning of museum programs focusing on archaeological collections may lead to valuable opportunities for both museums and formal learning institutes to establish a system of knowledge exchange and experience sharing.

STATEMENT – II

(Statement indicating the sources of information and the extent to which the thesis is based on the works of others and the portion of the thesis claimed as original.)

As Murray (1904) rightly said that 'to study archaeology without a museum is like studying art without a gallery, or anatomy without a subject'. Archaeology is essentially a specialized field of knowledge that needs to be explored beyond texts. Every object connected to archaeology has a different story to tell about its origin and existence. The visual impact of any artefact appeals the eye, enhances

the learning and inculcates the understanding about the facets of archaeology. Many scholars emphasised the benefits of object oriented learning experiences, the opportunity to see, touch and interact with objects in first hand which leave profound effect on young audiences in many different ways (Clarke, 2002; Hein, 1998; Hooper-Greenhill, 1994; Nigam: 1982; Talboys: 1996; Ambrose & Paine 2012). These studies led to further research to know the actual impact of hands on learning, or discovery learning in museums world wide as well as in India. Researcher collected the first hand data from various museums, conducted educational activities for making the archaeological collections significant source of learning in the selected museums. This practical input in the thesis is claimed as the original contribution by the researcher. Since museums add special values to the formal school and college education system, the current research was aimed to study, understand, and conduct practical sessions so as to estimate the significance of educational activities in museums.

The literary sources from museums, schools, libraries and archives by making-up small teaching packages, portable exhibitions, 'kits', has often been reported during museum conferences (Olofsson 1979). Many museums in India are creating kits to embark upon this idea as well. Such strategies that are popular in global context, are how far effective and practically done in Indian context, were also studied during the course of research. If museums are to claim the prestigious title of "educational institutions", they must study their collections in depth and interpret them, not merely show what they have collected (Burcaw 1983). Thus after study, observation and personal visits, and conducting practical sessions led to deeper insights about the innovations and potentials of museum education with respect to archaeology as a field of knowledge. Museums in India are engaged in conducting educational activities based on the administrative setups and availability of sources. The research is culmination of putting archaeology on forefront and creating an understanding of making its collections rich source of informal education from school level itself. In this process, previous studies based on various museum education strategies, and archaeological sources available in country, were also studied.

The following is the list of books and articles which formed the basis for the formulation of concepts used in the thesis.

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CHAPTER 1
INTRODUCTION

MUSEUM AS A RESOURCE CENTRE FOR ARCHAEOLOGICAL LEARNING

Museums in India are catering to myriad audiences through its dynamic multifaceted approach. India as a developing nation in terms of economy has numerous museums and learning centres. These museums as custodians of our heritage take the rightful initiative to make the present generation aware of their rich past and its unique culture. One can visualise the potential value of museums as a carrier for dissemination of knowledge of past societies & civilizations. The self-directed process of learning by visitor in a museum space is a voluntary phenomenon to gather knowledge and get educated about the material culture. Collections remain as the heart of museums, but their value can be realized only when they are effectively interpreted to museum users (King & Lord 2016). Just walking in a museum complex or exhibition area doesn't guarantee that the visitor is going to learn or get educated. Thus, interpretation is seen as the basic concept that can support the educational role of a museum. Knowledge is accessible to everyone in the museum but how much to deduce and learn or digest, is a voluntary task. The exhibition itself is a learning source, as a visual narrative that may aid in developing a defined learning module. Developing a well thought program or event enables in achieving the aim of knowledge development and awareness among the audience. Museum spaces must be multifunctional for entertainment, preservation, aesthetic enjoyment, learning/ exploration/ play/ expression/ communication; exchange/ collaboration/ interaction/ analysis/ representation/ recording and recollection (King & Lord 2016).

Museums are houses of curiosity, entertainment and knowledge. Thus museum becomes significant place where the real objects are interpreted, can be seen, shared and understood simultaneously. Although museum learning is always partially cognitive, it is primarily affective learning, concerned with changes

in the interests, attitudes, or evaluations of the learner as much as with the cognitive content (King & Lord 2016). Education is an unpredictable phenomenon and one cannot decide a single method of dissemination of knowledge, so one has to be open to every little bit of information or idea that can be collected to apply as effective method. Edutainment is the better term that is used in the context of museums and the programs offered.

In the past two decades, museums have become actively engaged as organizations of promoting heritage and cultural diversity in India. In this regard the museums like IGRMS, Bhopal has been active in conducting photo exhibitions, interactive programs, heritage corners in schools, running program like Friends of museum, to attract audiences of various cultural backgrounds. Similarly museums in Tripura like State Tribal Museum, has innovative interactive kiosks and programs that portrays and promote rich and diverse aspects of communities of the area. There are studies being conducted globally on the educational benefits and effectiveness of programs conducted in museums in relation to visits of school children and young visitors. Experience is not compartmented but continuous; there must be continuity therefore between the school and the home and its neighbourhood (Dewey 1966). The informal teaching learning experience that happens inside the museum act as an instrument for long term cognitive development for youth who are ultimately the future custodians of our heritage and it demands active participation.

School is a formal institution of education that revolves around the textbooks and its contents. Children go through lecture series, work book activities, project submissions, and smart class activity to fulfil their urge. They feel that the textbook and internet is the ultimate source of knowledge beyond which the education cannot be explored. Our students need more opportunities for inquiry-based learning that inspires curiosity and fuels their passion (Centre for the Future of Museums 2014). Active participation excites children and they use mind and body that create a cognitive change in their thinking

patterns. Pedagogy used in museums are object-oriented, thus a wide range of information can be used while working with an object.

Amanda Clarke (2002) through the following illustration very well explained how an object can be used to demonstrate its making, function, value, relevance etc. and thus even a single object can be used for explaining/disseminating multiple functions and associations which make it culturally fit into the context (Fig.1.1.1).

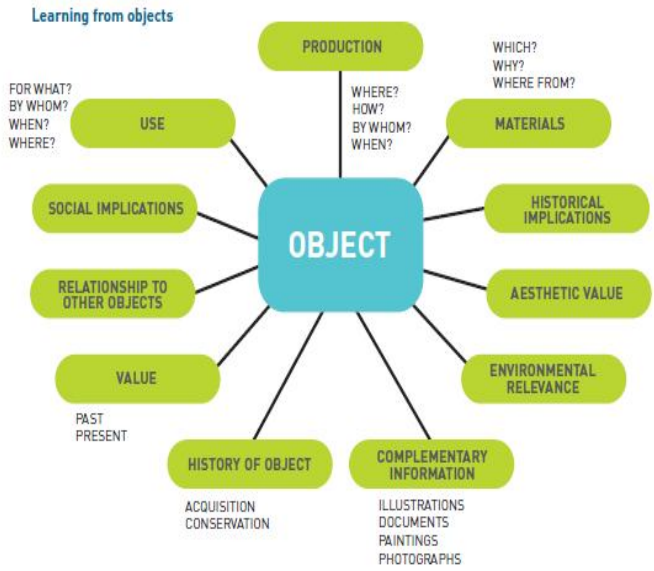


Fig.1.1.1 Illustration describing Learning from object (after Clarke et al. 2002)

Amanda Clarke summarized in her book *Learning through Culture* that objects can:

- Inspire creative work
- Sharpen visual awareness
- Help to develop skills
- Increase knowledge and understanding through direct contact
- Provide alternative ways of working
- Provide personal relevance
- Motivate learning, including children for whom traditional methods have little appeal
- Increase levels of involvement and engagement

Thus it becomes very clear that how, the museum objects could be vehicles for disseminating information and they could be effectively used for making museum as an informal learning space.

King (2016) opines; “It was shown that touching objects leads to a more engaged and active learning experience and long-lasting effect on memory as compared to text-based learning. Object-based learning increases skills, such as communication, organization, time management, and independent thinking. These are core skills encouraged in twenty-first-century learning initiatives. Objects can stand as mediator to provide links between the past and present and thereby enhance subject knowledge, especially in material based disciplines. Inspirations are not limited to higher education but also extend to learning in schools and lifelong learning”.

Every country has formal institutions of learning, but learning in a museum is altogether a different experience. Museum’s role in the present scenario is to educate the mass but not to duplicate school or university teaching thereby maintaining their sanctity as a non formal institution of learning. Learning needs to better connect students to their communities, culture and history (Centre for the Future of Museums 2014). Education provided in schools being formal mode of teaching-learning, has classroom pattern and syllabus criteria to dwell upon, and makes heritage and culture a 2-D experience. The formal education literature has suggested for decades that students would learn more if they were able to be involved in meaningful physical activity (Hein 1998). The main difference between the school and museum is that museums are wide open to individual exploration. One cannot deny the fact that school education initiates the process of making children aware of archaeology as a discipline of learning human past. During school hours it is not possible for the teacher in charge to take students very often for museum visit that has archaeological collection, or to a place that has archaeological significance. They promote heritage in various forms using practical hands on activities (project making) and other technology based programs such as slide shows. Although the actual connection between all forms of heritage is generated

through stories, practical sessions and programs mixed in appropriate proportions. However, the essential museum learning experience is the change in visitors' feelings, interests, attitudes, or appreciation of the subject matter due to the museum display (King & Lord 2016).

Museums are excellent centres of informal education and provide a visual aid as well as pool of information that cannot be filled in books (Olofsson 1979). These unique aspects are the added advantages of any museum display or program, and involvement of the visitor in a participatory exhibit or program enhances the experience further. Exhibits relate to the child's world of experience, and interpretation is more of provocation than instruction (Burcaw 1983). Even if pupils are unable to handle objects or explore a ruin, they can actually share a space with these things (Talboys 1996). Informal learning does not just "happen" but needs thought and planning. In fact, giving people options, letting them choose, and educating them on their choices demands intention and commitment that far surpasses the effort one has to exert to provide formal learning experiences (King & Lord 2016). The resources and tools that are available in museums or on their digital portals are assets to enhance the learning experience happening in schools. They broaden the horizons for the teachers and parents, and assist them to utilize this information to elucidate textbook information in a different perspective. One can witness the change in process of spreading knowledge if the active participation is adopted as a process in learning arena. Learning in school with textual sources cannot fulfil that curiosity of handling an object and getting feel of its distinctiveness. Schools must integrate the learning within their walls and outside the settings, in order to connect with the dynamic knowledge systems. The visual education in museums, when is presented in discovery learning format through active participation of the audience with the display, aids in making the didactic learning much more effective. Object handling is minds-on and hands-on through seeing and direct observation from the object (King & Lord 2016).

Museums can be rightly said as adjuncts to educational institutions, which cover every possible field of knowledge through its myriad collections, and archaeology being no exception to it. Visitors may or may not delve into deep critical viewing and learning. We have a collective desire to remember, to muse upon and to make sense of our personal and cultural past and pass that understanding on to future generations (Talboys 1996). The blend of primary sources of information i.e. objects, with contextual and correlated knowledge, gives museum a boost to motivate visits. Attracting people to the same object is a complex task. Museums contain, or are, the real thing and although the written word may feature during any visit it is the artefact that dominates (Talboys 1996). Learning these unique aspects of material evidences do involve getting acquainted with the actual collection. All artefacts have many facets that touch most, if not all, areas of the curriculum (Talboys 1996).

As the story of India's past reveals a life of about thousands of years of habitation, the collection of objects is equally vast. The quantity and quality are par excellence and reveals breathtaking realities of India's past. Museums in India have variety of collections according to their scope, nature and jurisdiction. Archaeological collection whether in national, state, local, regional, private or site museums, have good volume of representative materials. In addition the museums which are part of higher education institutions and universities have different role to play. Preserving, documenting, and researching their collections, these museums usually aim to aid teaching and research among students and faculty, although many are open to the public as well (King & Lord 2016). A comprehensive range of media is being used to communicate archaeological heritage and culture throughout the country.

The first museum collection in India dates back to 1796, when the Asiatic Society felt the need to house the many "curiosities" that had accumulated as a result of the collection of archaeological, ethnological, geological and zoological specimens by its members. The first important museum to be established was the Indian Museum in Calcutta, which was ready for

occupation in 1875. The earliest Indian museums are now more than 100 years old and have separate sections for art and archaeology, as well as galleries for geology, zoology, anthropology, etc. Markham and Hargreaves (1936) are right in stating: “The discoveries of the Archaeological Survey, by adding substantially to the history of India by awakening world-wide interest in its art and antiquities, have stimulated in no small measure feelings of nationalism and directed the attention of Indians to the need for preserving their archaeological treasures, which generally have added virtue of being more persistent than most material.”

Majority of the collection in Indian museums are of archaeological importance. The main reason for pursuing archaeology is to find out as much as possible about how recent and remote societies lived and operated (Adkins & Adkins 1989). The approach to disseminate this archaeological heritage is a way of linking past with present. The objective is to sensitize audience towards its irreplaceable myriad sites, monuments, artefacts, and all sorts of tangible and intangible heritage. Archaeology helps us to understand the past, and this understanding helps a great deal in the understanding of society today and the development of society in the future (Adkins & Adkins 1989). This sole purpose is achieved when one visits a museum housing archaeological collection. Museums in India have vast collection of artefacts ranging from sculptures, paintings, textiles, jewellery, pottery, coins, manuscripts, and even objects of metal, shell, stone, glass etc. Objects are loci which can lead you to many different directions and in the process, develop skills of close observation, questioning, discussion, description, documentation, comparison, making links and connections (Talboys 1996). Many Indian museums have collections of artefacts from the Harappan culture, the best among them being at the National Museum, New Delhi, which has excellent specimens of painted pottery, jewellery of gold and semiprecious stones, of seals, and the tiny animal figurines in clay, stone and metal, which display a sensitivity to nature, a humour and style which are the hallmark of the Harappan civilization.

Archaeological collection widespread in museums of India can be utilized for providing children an out of textbook experience. Museums can prepare children and youth for the future which involves informing them about the landmarks of our past civilizations that continued or were discarded, and why was it so in each case.

Museum learning starts at the point where museums connect with people and continues long after. Recognizing all the opportunities for teaching and learning inside and outside the museum can help the museums to strengthen their role in the communities around and in their visitors (King & Lord 2016).

Observant children have been known to spot things that archaeologists and others have missed (Talboys 1996). The rapid transformation and constant addition in information, about the excavated sites, collected objects or new processes in trend, makes the task of museums as well as schools, tedious to keep the record and updating the knowledge. Over the years, museums have shown in a variety of ways that they are very good in making students to have deep learning (Centre for the Future of Museums 2014). Speaking globally, many museums have created exhibitions focusing on the needs and interests of children, but in India, it occurs rarely.

As observed during the present research study, few museums in India are creating tailored programs to meet the needs of curriculum in schools. Sensitizing children about a particular subject may require lot of team work and resources, and planning a well designed program could suffice the need. If an exhibition cannot be created, at least a teaching learning resource worksheet, activity, storytelling and other activities could be conceptualised and produced. Story telling is an excellent way for museums to situate the objects and artefacts in a narrative sequence and convey it to the audience (King & Lord 2016). Information that is rich in association and presented in a meaningful context will be more accurately recognised, recalled and understood by pupils (Talboys 1996). Where objects are the primary vehicles of interpretation, children respond well if they are able to touch and interact with the object, and when they can talk about it (King & Lord 2016). When

artefacts are displayed there has to be some degree of interpretation so that visitors can make sense of what they see (Talboys 1996).

Among the archaeological remains and artefacts, many written records in the form of inscriptions, land grants, and coins enable archaeologists to interpret the past. A systematically developed database can prove to be useful for future interdisciplinary studies to popularise archaeological discoveries as it will be communicated at a platform for budding archaeologists. By creatively understanding archaeology, through educational activities the Indian museums can be transformed as centres of education at par with the international museums. The present museum scenario in India has encompassed almost everything such as mobile exhibitions, outreach programs, on site visits that may be indispensable pieces of information related to the object discovery and possession as various museums conduct such activities at differential levels.

This research is an initiative to explore the possibilities of how museums can become sources and centers of archaeological learning. Also, how the museums and schools in India collaborate or complement to create new directions of archaeological learning. Museums have the potential in exploring the ways to expand the educational impact of the collection they possess and also forge a future development plan that can generate new learning platforms. Thus museums can act as the agents of change and catalyst in the process of building learning opportunities. Through this research, models of archaeological learning are being discussed that were based on the archaeological collections housed in various museums of India. The current emphasis is that we should modify education for better participation and overall growth of learner.

Extended learning is the need of present and it requires experimentation, research and creativity. Museums allow students to interact on their own with the learning patterns that are outside the school or homes. Although there is a scope to change the mindset and gain a much more concrete foundation and attracting power that may play a significant role of influencing learning patterns in masses especially children. Research focuses on the outcome of the

methods that have been offered in real world scenarios, matching to the needs of museum and audiences.

Learning is a lifelong process. Providing ample opportunities to children, in their growing years, makes them discover the meanings of things that they are learning through various formal organisations around them. Ideally if museums can add to the curriculum patterns and gain a significant foundation to justify their presence, they will be strong catalysts as centres of lifelong learning. With advent of technology and global networking, the processes of knowledge generation as well as dissemination changed at a fast pace. Thus similar renewal is a must in promoting heritage & archaeology as significant aspects of knowledge to be imbibed by the present generation to preserve their past and present for the future. The better we understand the past, therefore, the better chance we have to understand and guide the present, contributing at the same time to the foundation of a stable and viable future (Talboys 1996).

Museums are the future limitless classrooms and the impact they can leave on generations has immense benefit to protect and promote heritage. Museum learning happens through many platforms and exhibition is arguably the primary one (King & Lord 2016). Museums no doubt can add an extra dimension to archaeological studies and better understanding of the process. They are truly living heritage vehicles and a rich source to promote and disseminate the dimensions of culture and civilization of a nation.

1.1 Major Objectives of the current research

1. To examine the importance of archaeology as a discipline in the field of museum and museum education focusing India. Estimating museums' presentation of archaeological heritage and its current utilization as a source of education was the focal aspect of research.

2. To construct effective learning experiences suiting to the collection of selected museums in India. This will help to involve and make the visitors acquainted with the actual collection through interactive

methods that are employed to attract different segments of visitors towards museums with archaeological collections.

3. The present study aims to highlight the existing programs and tapping potential of archaeological collection in various museums of national and regional stature in India that are open to the concept of educating visitors through their collections. Although, if there are no regular active programs, the best possible use of collection for the learning purpose has been explored and suggested.

4. To highlight that museums offer young learners experience desirable for their development. The methods involved must have the potential to involve multiple senses in a discovery learning-format, as the school children or youth from institutions of formal learning often don't get the opportunity to experience an archaeological excavation, and how a museum acquired its collection or displayed the same. This research work focuses on the presentation of the collections in such a way that relevance of archaeology gets enhanced in minds of children through museum. The research tools and methods comprise of the practical approach using designed activities.

5. To gather primary data for the aforesaid objectives, the methodology adopted was the use of basic tools of research such as survey forms, observation of workshops and questionnaires. Practical sessions for school children were conducted in order to involve children in multisensory learning process. Worksheets and workshops have been specially designed to focus on archaeological collection of different museums. Also conducted heritage site tours and museum visits as a connecting link to generate effective outcomes. This qualitative learning database emphasises on present scenario of museums in India as a component of education and their impact on curriculum supplement to archaeology.

6. To study the activities that may aid in enhancing the experience of archaeological learning. These can be both planned and unplanned activity and may even be conducted by non-government organisation for the participants.

7. Few comparisons with museums and archaeological sites from international context that offer programs on archaeology will also be discussed in order to add an additional support to the Indian context. Archaeological sites in United Kingdom, namely Sutton Hoo and Roman Bath, have been active in conducting programs on *in situ* sites that attract variety of visitors and effectively disseminate the knowledge about people of the past and their lifestyle.

1.2 Outline of thesis

Chapter 1: Introduction – Museum as a Resource Centre for Archaeological Learning

This chapter will focus on describing effectiveness and need of practical participatory approach and applying it for generating wider audiences and also to cater the young learners in order to provide those enhanced learning experiences. The linkages that are then formed or speculated can be discussed by set of valid remarks and authentic approaches. Education phenomenon is as unpredictable as the human nature; one cannot decide a single method of dissemination of knowledge. Therefore, one has to be open to every bit of information and idea that one can collect to apply in practice. This chapter includes the objective of the present study, outline of the chapters of the thesis, scope of the study and its limitations. This chapter also highlights the unique aspect of archaeology as a subject and how it can be learnt through museum collections in India.

Chapter 2: Research tools and Data Collection

First part of this chapter will focus on the types of tools used for the present research by observing the primary and secondary sources from various museums.

- Resources evaluation: How the available resources i.e. museum practices, finance, staff of a particular museum can be effectively used for developing educational programs/ worksheets to communicate/promote archaeology as a subject.

- Pattern of Museum Visits: Brief about types of museum visits by school children such as casual, pre-planned in relation to curriculum requirements and knowledge of teachers assisting the children, active participation of both in programmes offered by museums, was collected and studied.

- Surveys & Questionnaires: Survey and interviews of school children, teachers and museum staff educators was done to generate feedback about the practical reality of the selected museums. Feedback forms were created to gather available information of the museums. Based on the feedback and other collected information, the survey sheets and activity sheets were developed for case studies.

- Review of Museum publications and school curriculum and other printed and digital material records: Annual reports of museums act as significant source of data along with other museum publications and literature provided by museums. Publications, its content value and utility for imparting education related to curriculum of school (basically on guidelines of NCERT or central board in India) were carefully surveyed to develop effective activities to supplement the school curriculum. Publications online and literature available for education through museums to school children related to their curriculum and purpose of study for the senior secondary onwards were carefully surveyed and studied.

Data of diverse collection of museums both, government & private was collected for research through literature surveys and personal observations.

The second part of this chapter briefly discusses about few popular nongovernmental organisations namely, The Sharma Center for Heritage Education (Chennai), Heritage Lab (Chandigarh), Heritage Trust (Vadodara), Sahapedia, ITIHAAS (New Delhi) etc. This chapter will emphasize on need of policy drafting regarding educational role of cultural organisations for nation.

Chapter 3: Empirical Case studies

Based on the data collection, literature survey, the research tools were designed. Accordingly museums operating at various levels of administration (national, regional) were chosen for empirical studies. The present chapter will discuss the practical activities conducted by researcher as a resource person in selected museums. The activities were conducted in museums, on site, in non – government setup and other school or government agencies.

National Level

- **National Museum, New Delhi** which has a permanent gallery on Harappa and other archaeological galleries, conduct series of programs to engage children with museum exhibits. It has hands on session, gallery walks and activity sessions apart from special lectures and movie shows.

- **Allahabad Museum** conducts various summer vacation programs, children week programs, regular screening of documentaries, special lectures, and workshops or programs that directly relate to galleries in the museum. They have concept of Heritage corners that is popular in schools.

- **National Science centre** at Delhi conducts- science drama, popular lectures, quiz shows, debates, science fair etc. at city, state, national level and gives opportunities to make children (especially schools) to participate and visit an informal institution of learning. They have

specially designed galleries that have portions of heritage education. They also have a Museobus as well that was recorded during this study.

Regional Level

- **Archaeological Site Museum visits of children at: (a) Lothal and (b) Dholavira.** These museums near the partly reconstructed and preserved sites conduct programs related to past civilizations of India and interpreting the site so as to make children understand their significance in Indian archaeology.

- **Museum of Archaeology at the Department of Archaeology and Ancient History, Baroda**: The Maharaja Sayajirao University, Baroda, has frequent visits of school children where students can come for a planned visit and have a look at galleries, artefacts and documentaries as per education requirement.

- **Punjab State War Heroes' Memorial and Museum, Amritsar** has a collection beginning from earliest civilization and history of India then connecting to Sikh heritage. As a part of educational summer program, an activity was conducted of seal replica making, to make children aware of the earliest people and their material culture.

- **Activity conducted at Navlakhi Vav, Vadodara:** Activity focusing on water conservation connecting heritage like stepwells was conducted as a part of program organized by Heritage Trust, Vadodara.

- **Activity conducted in non- government set up – Gurugram-** In a non government, fair called Hichki Mela, open to all activities related to prehistory, world civilizations and Indus valley pottery and seals, was organized. This resulted in creating awareness as well as a

kind of observation to gather information of interests of children in informal set up.

Chapter 4: Overview of Archaeological Collection in Museums of India

The chapter focuses on a brief compilation of statistical data on museums of India (that were personally visited by the researcher) to experience, observe and understand the archaeological collections. Description about the Archaeological Site museums in India and their effectiveness observed through attending excavation camps, site visits, seminars and publication etc. will also be discussed.

Archaeological museums which conduct drawing or poster making competitions or music and theatrical performances to encourage youth to join hands in learning about archaeological findings and their importance were recorded. University departmental museums that provide information on regional and national level about archaeological findings/ sources were recorded and will be discussed in this chapter. Museums at national level such as in Mumbai, Kolkata, Hyderabad or Chennai, and museums and sites in states of Andhra Pradesh, Uttar Pradesh (Sarnath), Punjab (Amritsar), Goa, Gujarat such as at Amreli, Watson Museum (Rajkot), Kachchh (Bhuj), Jamnagar, Junagadh etc., that has rich archaeological collection and organizes visits for school children (on demand) were visited for data collection and study.

Chapter 5: Discussion and Conclusion

This chapter will cover the data that is concluded as the outcome/worksheets that were collected from museums and participants of various activities. Practical application of the tools developed and their outcomes is summarised. A sample resource loan kit for archaeological educational activity is produced as an outcome of the work. Similar kind of economically affordable kits can

be produced by any museum with archaeological collection to popularise archaeology.

This chapter will include the -

- findings of the study.
- suggestions to improve the situation of museum education in Indian museums.

It will further include the summary of comments and remarks of the case studies of museums, interviews of educators & staff involved in communicating archaeology as learning discipline. This chapter will discuss the opportunities that evolve in planning an effective knowledge exchange program between museums and formal learning organisations. Chapter will discuss the necessity and significance of incorporating cultural policies so as to include museum educational activities as an essential element in museum function. This study tends to seek exploration of innovative programs and human resource development by the museums focusing the field of archaeology.

1.3 Scope of Study

The National level museums in India have developed strategies to educate children using all available sources in hand. They have delegated different roles to different departments or staff. Some of them offer internships, volunteer programs to prepare university students to cater school groups or aide in summer and winter programs. Also some regional museums offer tours or programs to school groups or young audiences follow this strategy. Some museums are active in conducting educational programs have also developed kits that act as effective modules for observation and learning about collection. Such models can be replicated or suggested to other museums and can be fitted as per their administrative and budgetary constraints. Economically efficient and effective learning tools can be developed using the in-house collections. Collaboration strategies to pool in non government organisations

can be developed and applied accordingly. Thematic programs based on various gallery displays can be created as yearly calendar and schools in vicinity of the museum can be informed to take benefit from it.

This study is an effective effort in suggesting and emphasising the educational strength of museums and archaeological collection. Development of a skill set related to archaeological learning can be proposed for future to make the archaeological collections more applicable.

1.4 Limitations of Study

One aspect of research was based on considering learning patterns and the sources that are available to children about archaeological understanding imparted in formal learning institutions. The National curriculum based on NCERT syllabus was looked into much more details rather than focusing on State wise syllabus. Initially as the study and first program was primarily based and developed in Gujarat, the regional Gujarati history books were referred to get a comparative understanding.

Also due to the regional languages, the regional museums will need more regional specific resource material in regional language. The workshops/ activities were conducted in the museums of various levels of administration and types of collection where children can understand and interact either in english or hindi.

India boasts more than 700 museums at present, thus for the aforesaid study, selected museums were chosen, approached, and after receiving due permissions survey and observational study was done. Although no doubt many museums that had not been covered in this study might give a fresh insight for future modules and programs focusing archaeology as a source of learning from museum collections.

CHAPTER 2
RESEARCH TOOLS AND DATA COLLECTION

PART I

2.1 TOOLS OF RESEARCH

Qualitative approach to research is concerned with subjective assessment of attitudes, opinions and behaviour (Kothari 2004). Qualitative research tends to examine problems from the perspective of the individual participants, using methods such as indepth interviews, participant observation and close analysis of data (Hohenstein & Moussouri 2018). The current research was aimed to get information regarding the display quality and effectiveness of understanding the archaeological content from the point of view of visitors and staff.

In present study different research tools that were necessary to generate first hand information i.e. primary data. The primary data are those which are collected afresh and thus happen to be original in character (Kothari 2004). The methods of collecting primary data include observation, interview, questionnaires and schedules. To record information that was available during visits to selected museums in India, researcher devised various tools of data collection such as questionnaires, interviews, feedback forms and photo documentation of museum collections and heritage sites. The facilitators i.e. education staff or resource persons of programs were also interviewed in order to know the details which were not available in published form such as on websites or brochures. The significant aspect that came to light regarding regional or local museums from the personal experiences shared by the museum staffs and facilitators about the situations and activities highlight the unplanned nature of museum visits by school groups. However, this enabled the researcher in proposing and shaping up future directions of activities to be conducted, for visitor benefit by these museums.

2.2 Museum as a source of education: How it is done?

The normal pattern observed in educational tour of any museum begins with children gathering in groups, going around the collection displayed, observing few showcases, without following specific guidelines or instructions to follow a path in order to understand the display in better perspective. The museum visits become more meaningful when the whole exercise is planned and executed well around the collection. Conduction of an activity that focuses on archaeological objects in museum is rare in local, regional and state level museums, although some museums at the Central level do offer downloadable worksheets or publications for children to follow up at home or in their next visit. The museums act as the informal learning center to supplement the formal learning in the school. The kind and the extent of learning experiences within the museum space are based on the kind of activities the visitor gets involved in. A well planned immersive and integrative experience enhances the learning abilities and cognitive understanding of concepts. This leads to sensitization towards invaluable heritage that aid in its protection, preservation and propagation.

In view to utilize effect of these experiences, and to generate the data, research tools like

(1) Observation (2) Interviews (3) Questionnaires

and (4) Worksheets (for children) and feedback forms (for visitors) were used.

2.3. RESOURCES EVALUATION

The museums that were visited during the course of study were evaluated by looking at the onsite sources like infrastructure (facilities), human resource (staffing structure), finance (funding aspects) and the existence of specialized departments devoted to education, curatorial or caretaking (who look after the collection in absence of the main administrative staff).

The below listed museums, were selected for study and to collect first hand conduction of educational activities by the researcher. The collection is first hand source that caters as first hand information. Different museums in India had different administrative setups and resources. The museums are categorized into three groups on the basis of methods of approach and the type of data as primary and secondary, which was targeted to collect.

Group 1 includes the museums where Empirical Case studies were conducted. Different research tools were devised to practically examine and execute the activities planned as per the collection and type of audience available in that museum/ organisation.

Group 2 consists of museums where researcher had personal interaction with staff but not part of empirical case study. At some museums questionnaires were filled by available staff. These museums were extensively observed in terms of activities, sources and events that were available for all segments of visitors including school groups.

Group 3 type of museums visited by scholar and on observation basis, data was collected by researcher. Photo documentation of archaeological collections was done in these museums. Available printed brochures or related information was also collected. Museums not described (discussed in chapter 4) yet explored were Salarjung Museum, Telangana; Chandigarh government museum; Government museum, Ahar, Udaipur; Goa state museum, Panaji; Orissa state museum, Bhubaneswar; Deccan College - museum, Pune.

The secondary sources were in printed, audio-visual or digital form. Apart from these secondary sources, museum often had docents that acted as facilitators/resource persons that were involved with the visitor engagement with the collection. They were either in-charge of site or care takers who were acquainted with visitor and information management. They too provided valuable

information on the activities of planning and execution of programs in the museum.

Group 1

Sr. No.	Name of Museum	Infrastructure/ Facilities/ Services	Finance/ Funding	Human Resource	Publicity Materials
1.	Allahabad Museum, Allahabad/ Prayagraj (Uttar Pradesh)	Library, visitor amenities, auditorium, cloak room, modelling section, publication, replica sale and ticket counter are part of the facilities available at the museum. Parking is not available as museum is situated in a park/garden premises.	Events for children like, painting competitions, summer programs, quiz and art appreciation courses for university students, which are funded by the museum authorities, or nominal charges. In 2018-19 museum has refurbished galleries, for enhanced visitor experience.	Specific staff allocated for duties as resource person, as educator, and for photography. Library and other services, pertaining to visitor reception and security etc., people have been appointed.	Museum brochures and books.

2.	National Science Centre, New Delhi	Library, visitor amenities - cafeteria; auditorium, audio- visual room, cloak room, modelling section, publication & ticket counter. Museo-bus (mobile exhibition van) as part of outreach services.	The centre organises various events for children like science fair, drama competition, summer programs and quiz and orientation courses for university students. Nominal charges for participation.	There are specific staff with allocated duties as resource person, educators or docents for gallery tours and talks, gallery attendants to monitor proper functioning of the interactive aids/ media deployed at various exhibition galleries. People for library and other services.	Museum brochure and newsletter .
3.	National Museum, New Delhi	Library, visitor amenities, auditorium, cloak room,	The museum conducts various events for	Specific staff allocated duties as resource	Museum brochure and map, online

		modelling and photography section, publication, replica sale, and ticket counter. Activity room for children and tactile gallery for differently abled visitors.	children like 'Playtime at National museum', other summer and winter programs. Internship programs for university students, painting competitions and other gallery based events, art appreciation courses for school and university students - nominal charges.	persons, educator or photography. People for library and other services. The administrative, academic and exhibition based functions, are performed by specific departments. Activities outsourced. Active volunteer program for school groups and other segments audiences.	resources for download, books and workbooks.
4.	Punjab State Wars Heroes Memorial and Museum,	Visitor amenities, 7 D theatre, cloak room, and ticket counter. Parking facility.	Events for children and adults. Free guided tours, talks and gallery	Volunteers for guided tours. Visitor services and security staff.	The Amritsar site tour bus has a stop at museum

	Amritsar (Punjab)	Interactive media touch screens, multi touch tables, and indoor theatre.	events, special programs mostly free of cost for children.		to encourage visitors to spend time in museum.
5.	Museum at the Department of Archaeology and Ancient History, The Maharaja Sayajirao University of Baroda, Vadodara (Gujarat)	Open for viewing on request. Multimedia (projector). Prior permission needed.	University	Staff and research scholars, are delegated for guided tours and workshops.	Museum brochure
6.	Archaeological Museum Lothal, Ahmedabad (Gujarat)	Library cabinets, visitor amenities, cloak room, publication & ticket counter. Regular audio-visual show. Brochures and publications.	Absence of regular events. Under Archaeological Survey of India.	Gallery attendants and security personnel (on site).	Museum brochure with map, guidebook

		Parking space.			
7.	Archaeological Museum Dholavira, Kachchh (Gujarat)	Remote location. Visitor amenities. Gathering or meeting room. Parking area.	Absence of regular events. Under Archaeological Survey of India.	Gallery attendants and security personnel (on site).	Museum brochure

Group 2

Sr. No.	Name of Museum	Infrastructure/ Facilities/ Services	Finance/ Funding	Human Resource	Publicity Materials
1.	Fort St. George Museum, Chennai (Tamil Nadu)	Visitor amenities, cloak room, audio visual corner, publication & replica sale counter and ticket counter. No parking facility.	Events for children, tactile corners for children, teacher training programs, courses for university students - minimal/ nominal charges. Under Archaeological Survey of India.	Specific staff as resource persons, as gallery attendants, for sales counter and other services.	Museum brochure
2.	Shri Girdharbhai Sangrahalaya	Library, visitor amenities, auditorium/	Events for children, competitions,	Limited staff. Keeper to	Museum brochure and

	, Amreli (Gujarat)	open hall, publication counter. Open Science park for children. Parking available.	summer programs, and Art and music appreciation courses, nominal charges.	administer all affairs. Attendants, resource persons, educator are on outsource. Library services. Technical positions.	guidebook
3.	Watson Museum, Rajkot (Gujarat)	Library, visitor amenities, laboratory for conservation, publication & ticket sale counter.	Regular activities for school groups. Film shows, gallery talks and walks, competitions.	Specific staff for technical and gallery supervision.	Museum brochure
4.	Archaeological Museum, Chandragiri (Andhra Pradesh)	Visitor amenities, ticket counter and audio-visual corner. Sound and Light show. Parking is available.	No regular events conducted. Under Archaeological Survey of India.	Gallery attendants, security personnel (on site - open air display).	Museum brochure
5.	Kachchh Museum, Bhuj	Visitor amenities, publication & ticket sale	Occasional programs. Demonstration by artisans.	Specific staff for technical and	Museum brochure

	(Gujarat)	counter. Parking is available.	Under State government.	maintenance. Gallery attendants.	

Group 3

Sr.No.	Name of Museum	Infrastructure/ Facilities/ Services	Finance/ Funding	Human Resource	Publicity Materials
1.	Chattrapati Shivaji Maharaj Vastu Sangrahalaya, former Prince of Wales Museum, Mumbai (Maharashtra)	Museum shop, library, visitor amenities, auditorium, cloak room, modelling section, conservation lab, publication & replica sale counter. Trust museum. Museo-bus (mobile exhibition van) for outreach.	Events for children-competitions, summer programs. Internship courses for university students. Minimal/ nominal charges for programs.	Specific staff, curators as resource person, educator or for photography, for library, and other services.	Museum brochure, CDs, books, collection catalogues
2.	Archaeological Museum,	Visitor amenities, cloak room,	Events during World Heritage	Technical person as administrato	Maps are available in English and

	Nagarjunakonda (Andhra Pradesh)	publication & ticket sale counter. It is approachable only by sea. Information kiosk. Vehicle for specially abled visitors.	week. No regular events. Under Archaeological Survey of India.	r. Gallery attendants, security personnel (on site).	Telugu on site itself.
3.	Archaeological Museum, Amravati (Andhra Pradesh)	Visitor amenities, publication & ticket sale counter. Vehicle for specially abled visitors. Parking available.	No regular events. Under Archaeological Survey of India.	Technical person as administrator. Gallery attendants, security personnel (on site).	Museum brochure
4.	Indian Customs and Central Excise Museum, Panaji, Goa	Visitor amenities, cloak room, publication & ticket sale counter. Tour tablet, which is provided on request	No regular events. Under Customs department, Government of India.	Reception staff, gallery attendants and security personnel.	Museum brochure

		(chargeable) Coded labels all over the exhibition.			
5.	Archaeological Museum, Sarnath, Uttar Pradesh	Visitor amenities, cloak room, publication & ticket sale counter. Touch screen kiosks. Parking available.	No regular events. Under Archaeological Survey of India.	Reception staff, gallery attendants and security personnel. Attendants at Stupa site to keep a check on visitors.	Museum brochures
6.	State Archaeological Museum, Hyderabad, Telangana	Visitor amenities, publication & ticket sale counter. Limited parking.	No regular events. Under State Archaeological Department.	Reception staff, gallery attendants and security personnel.	Museum brochure
7.	The Government Museum, Chennai (Tamil Nadu)	Library, visitor amenities, auditorium, cloak room, modelling section, publication & ticket sale	Events for children-painting competition and summer programs-minimal/ nominal charges.	Specific staff as resource person, educator, photographer. Library staff and ancillary	Museum brochure and books

		counter. Mobile exhibition van for outreach.	Under State Government, Tamil Nadu.	works.	
8.	Archaeological Museum, Velha Goa	Library, visitor amenities, audio-visual corner, children activity area, publication & ticket sale counter. Parking facility at a distance.	Events for children-competition and other programs-minimal/ nominal charges. Run by Archaeological Survey of India.	Specific staff - resource persons, educator and gallery attendants.	Museum brochure
9.	Indian Museum, Kolkata	Library, visitor amenities, auditorium/ meeting room, cloak room, modelling section, laboratory, publication & ticket sale counter. No	The museum conducts various events for children-competitions, summer programs, quiz and art appreciation courses-minimal/ nominal	Specific staff as resource person, educator or photographer. Library, ancillary services.	Museum brochure

		parking facility.	charges. Under Central government.		
10.	Thanesar museum, Kurukshetra, Haryana	Library, visitor amenities, publication & ticket sale counter. Parking facility available.	No regular programs. Under Archaeological Survey of India.	Limited staff. Administrator, gallery attendant, library.	Museum brochure

2.4 PATTERN OF MUSEUM VISITS

The visits to museums by a school or group of children are usually a planned trip, but the course of action related to participation in an activity or observing a collection sometimes occur as unplanned affair. Brief on types of visits to museum by school children such as casual, pre-planned in relation to curriculum requirements; knowledge of teachers assisting the children; active participation of both organizations in programs offered by museums; was collected and recorded.

A trip focusing on archaeology as a subject or content is rare during school time. In Indian context, a *planned visit* in which the visiting group school intimates and takes permission to see a particular collection (such as archaeology) appears to be rare. While National level museums are telephonically or by email are requested for the same, in regional or local level museums it is not in practice. Rather children get more opportunities travelling with family, friends or out of curiosity with fellow groups. Thus *unplanned visits* in museum considered as an educational tour are common for many schools in India. It is quite common that

planning is only done if a particular collection is targeted as a part of teacher's lesson plan or some project connected to the curriculum.

A museum can increase its education activities for building skills, creating conversation, and making the museum as a space for imparting information while thinking about how it can optimize all of these touch points (King & Lord 2016). This is a widespread scenario visible in various museums of India. Museum in present context is much more popular as an art organisation spreading the knowledge of crafts, music, arts etc. Even the summer programs, short term courses or other cultural events reflect the same and the level of interest in a particular section or collection. Museums add value to lives of people and connect them with ideas that represent the human civilization. Preparing well in advance for tapping the potential of resources at museum, enhances the qualitative output of visit and meets the aim of promoting and safeguarding heritage for future. In a way it is a two way beneficial aspect if visits are looked as an opportunity for learning.

Notable museums such as Government Museum, Chennai; Shri Girdharbhai Sangrahalaya , Amreli (Saurashtra), and Kachchh museum, Bhuj, Gujarat have a noteworthy archaeological collection and display hence they could plan educational activities that may compliment the collection.

(i) FIELD VISIT/ DATA COLLECTION AT KACHCHH MUSEUM, BHUJ, GUJARAT (MARCH 2013)

After the partition of India in 1947, the significant Indus valley sites and collection went into Pakistan. However the state of Gujarat has large number of museums having Harappan collections. Thus, State of Gujarat is rich in Harappan archaeological material and the collection in Kachchh Museum is myriad and noteworthy. Kachchh museum in Bhuj has scenic location as it is situated on the banks of the Hamirsar lake and just opposite the Nazar Baugh garden.

Kachchh museum has maintained the charm of presenting culture with authenticity and applied modern display panels to present the information without

any hassles. Any person interested to visit Kachchh gets all information at one point and that to in a perceptive way. Museum gives full feeling of being in Kachchh and a glimpse of how living heritage is still prevailing in the region. The museum has information panels that provide precise information, helpful for a visitor as well as students of various educational institutions. These panels complimented with artefacts on display, impart a sense of understanding in youth that culture is unique and part of their identity.

The collection of museum is mostly regional and provides a glimpse of Kachchh. The excavated material, the historic antiquities, traces of landforms, photographs of cultural events in this region and the handicrafts, constitute the display of the galleries. The museum is divided into two galleries, and some artefacts are in outdoor display as well. As one enters the ground floor gallery the display starts with stone inscriptions, Indus valley civilization panels with antiquities, coins, sculptures, photographs, dioramas of ethnic tribes of Kachchh, Gujarat.

Showcases with the display of artefacts such as pottery, shell objects, terracotta figurines, beads, bangles, and seals and information related to the Indus valley civilization and the excavated material from the sites of Gujarat are seen at the museum. The panels are bilingual and well informative (Fig. 2.4.1).

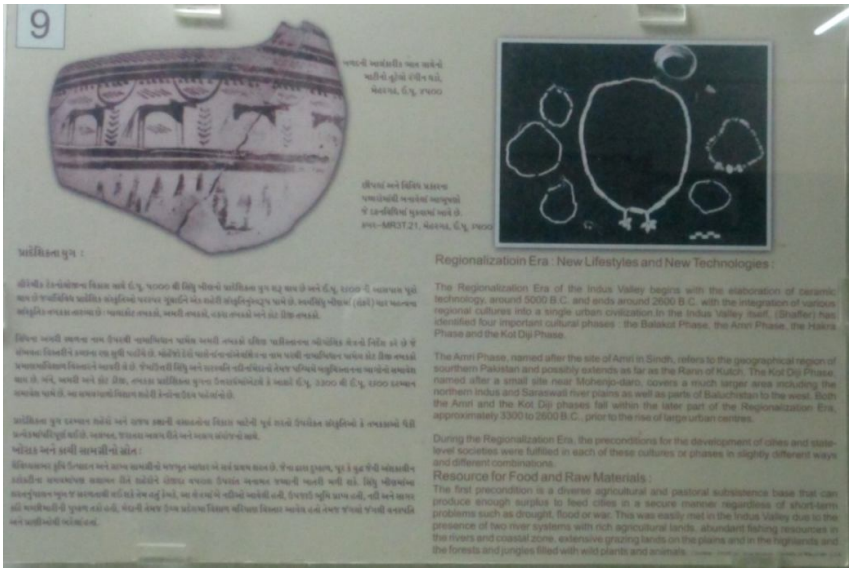

9
Regionalizatioin Era : New Lifestyles and New Technologies :
The Regionalization Era of the Indus Valley begins with the elaboration of ceramic technology, around 5000 B.C. and ends around 2600 B.C. with the integration of various regional cultures into a single urban civilization in the Indus Valley itself. (Shaffer) has identified four important cultural phases : the Balakot Phase, the Amri Phase, the Hakra Phase and the Kot Diji Phase.
The Amri Phase, named after the site of Amri in Sindh, refers to the geographical region of southern Pakistan and possibly extends as far as the Rann of Kutch. The Kot Diji Phase, named after a small site near Mohenjo-daro, covers a much larger area including the northern indus and Saraswati river plains as well as parts of Baluchistan to the west. Both the Amri and the Kot Diji phases fall within the later part of the Regionalization Era, approximately 3300 to 2600 B.C., prior to the rise of large urban centres.
During the Regionalization Era, the preconditions for the development of cities and state-level societies were fulfilled in each of these cultures or phases in slightly different ways and different combinations.
Resource for Food and Raw Materials :
The first precondition is a diverse agricultural and pastoral subsistence base that can produce enough surplus to feed cities in a secure manner regardless of short-term problems such as drought, flood or war. This was easily met in the Indus Valley due to the presence of two river systems with rich agricultural lands, abundant fishing resources in the rivers and coastal zone, extensive grazing lands on the plains and in the highlands and the forests and jungles filled with wild plants and animals.

Fig. 2.4.1 A bilingual label, Kachchh museum

Researcher interacted with a group of 78 students (Fig. 2.4.2) of classes 3rd to 8th of Sotavak Prathmic Shala from Patan, Gujarat, accompanied with their class teachers and Principal Mr. Dahya Bhai Patel on their visit to museum. Prior to museum visit the students were on trips to Rani Ki Vav, Patan and Sahastralinga talav, which made them to relate the museum collections and heritage sites.

Fig.2.4.2 School students, Kachchh museum

School students were accompanied by teachers who managed the visit inside the museum galleries and provided basic information to children as and when required. By the nature of visit it was visible that it was unplanned as there was no museum staff to guide and assist these school students in describing the display and collection. The motive of teacher behind this visit was to make children aware of heritage & culture of Kachchh region, Gujarat and provide them the experience of museum visit that can enhance their understanding about people and their lifestyles. Students were very much inquisitive about the dioramas and ethnic communities represented through the display. Though the visit was unplanned, it provided them with the knowledge of the people of Gujarat and their material

culture. It is their teachers' initiative that allowed students to plunge into the pool of knowledge that a museum can provide more information related to curriculum which could supplement the textbooks. Here the 3D display enabled a better perspective and long lasting impact in their minds. The visit was fruitful as the students were joyful to see the displays and were nicely interacting with researcher about the facts they learned in this visit. It appears to be a memorable and informative experience for them which were out of the four walls of school but equally education oriented.

Proposed activities for creating Learning Environment

Kachchh museum is being visited by schools quite frequently can introduce gallery talks, object related programs like story writing or choosing an object and making a simple project associated with all the information available. Museum should take the opportunity to help schools to encourage adopting a showcase and planning some activities like photo talks, site visits or recreating the similar object in some art material like clay, paper or craft object. Also artisans may be invited from nearby villages, namely from Nirona (the craft village) to demonstrate crafts associated with this material culture. This kind of programs enhance footfall and create a sense of belongingness within the children enabling them to protect and promote their own heritage for the posterity.

The engagement of modern technology like AR/VR in the interpretation of archaeological data can be done as the museum lack concepts of interpretation of specific aspects of archaeological collection, objects, their functions and usage. Mobile cameras being simple communication tool which is available with almost all children and teachers, the visit to museum can be recorded in photos and later the children should be asked to develop heritage corner or informative panel in school which will encourage other students to visit and explore the collection in the museum. This way the sensitization towards museum collection and information can be raised.

(ii) FIELD VISIT/ DATA COLLECTION AT WATSON MUSEUM, GUJARAT (AUGUST 2013)

Mr. V.V Desai (Incharge Curator) of Watson Museum, Jubilee Bagh, Rajkot has been associated with museum since 7 years. The leaflet (Fig. 2.4.3) about the museum was obtained and the list of activities that were conducted during the year are briefly mentioned in it. Watson Museum was established in 1888, and as per the museum, leaflet "most of the museums in Gujarat are situated in Saurashtra region. These museums are founded by the rulers of princely states. Watson museum is a multidisciplinary museum has crossed a century of existence and possesses a land mark position in Saurashtra". This museum was established in the name of Colonel John Watson, who was the political agent of Kathiawar. John Watson was interested in history and archaeology of Saurashtra, and collected artefacts that fascinated him. To honour his multi- level services finally led to decision of building a memorial, museum to house the exhibits that were collected by him. Thus 1888, Watson museum was founded in the building known as Memorial Institute. In 1893, on the occasion of inauguration ceremony of the Memorial Institute, an exhibition was held which was inaugurated by the Governor of Bombay- Lord Heris and later these exhibits were kept in Watson Museum. Collections of John Watson, collection of Robert Brucefoote, gift from princely rulers are the nucleus exhibit of this museum. The museum was enriched by the receipts of treasure trove act, gifts, purchases and objects such as copper plates, coins, inscriptions – collected by the field works of ex-curators. The museum was reorganized by grant of Central Government in 1968. In the year 2001, museum building was damaged by the earth quake. The renovation of the building was carried out by the grant given by Central Government and State Government. At present there were 16 galleries in the museum, housing collection ranging from Pre-historic stone tools; Harappan sites (Fig.2.4.4) ; sculptures from Ghumali area; metal sculptures of 16^{th} to 19^{th} century Gujarat; stone inscriptions from 3^{rd} century; coins from Indoparthian, Kshatrapas, Kushan to Delhi sultanate; anthropological collection of tribes of Gujarat; handicrafts; paintings;

manuscripts; furniture; European art; musical instruments; rocks and minerals; natural history etc. all comprise the collection on display.

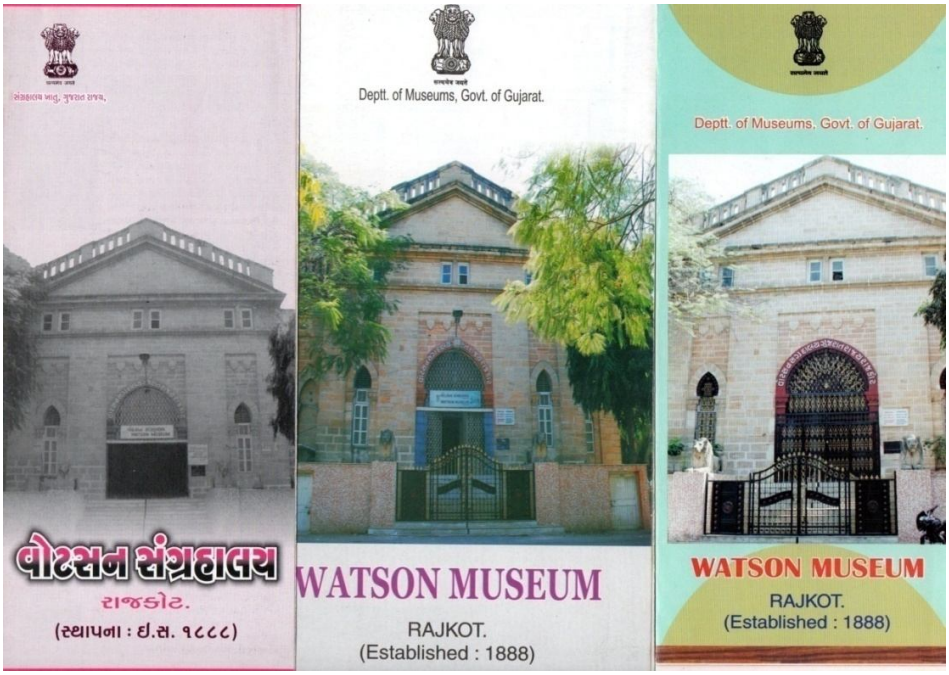


Fig. 2.4.3 Brochures, Watson museum, Rajkot

Fig. 2.4.4 Replicas of Harappan antiquities, Watson Museum

Mr. Desai described that this institution offers educational services like gallery talk, walk through, film show, and similar programs to strengthen the relationship with other educational institutions and the museum. Various handicrafts workshops, exhibitions and other promotional events are the regular activities of this museum. The museum also has a library open to scholars and students. The museum sends invitations to schools and visitors and they have brochures that attract and inform audiences of perspective events time to time. According to Mr. Desai, the Natural history section is most attractive among young audiences and the museum promotes this section. The museum also has a publication counter consists collection of books and research publications. The organisation conducts programs during Museum week and World Heritage week.

The programs were usually choice based and generally were not planned to promote specific collections. These programs were offered to sensitize young audiences towards museum culture and also to make them engage with the collection. There is a felt need for active participation of children towards museum activities and programs and thereby generating the identity of the museum.

Proposed Activities for Developing Learning Environment

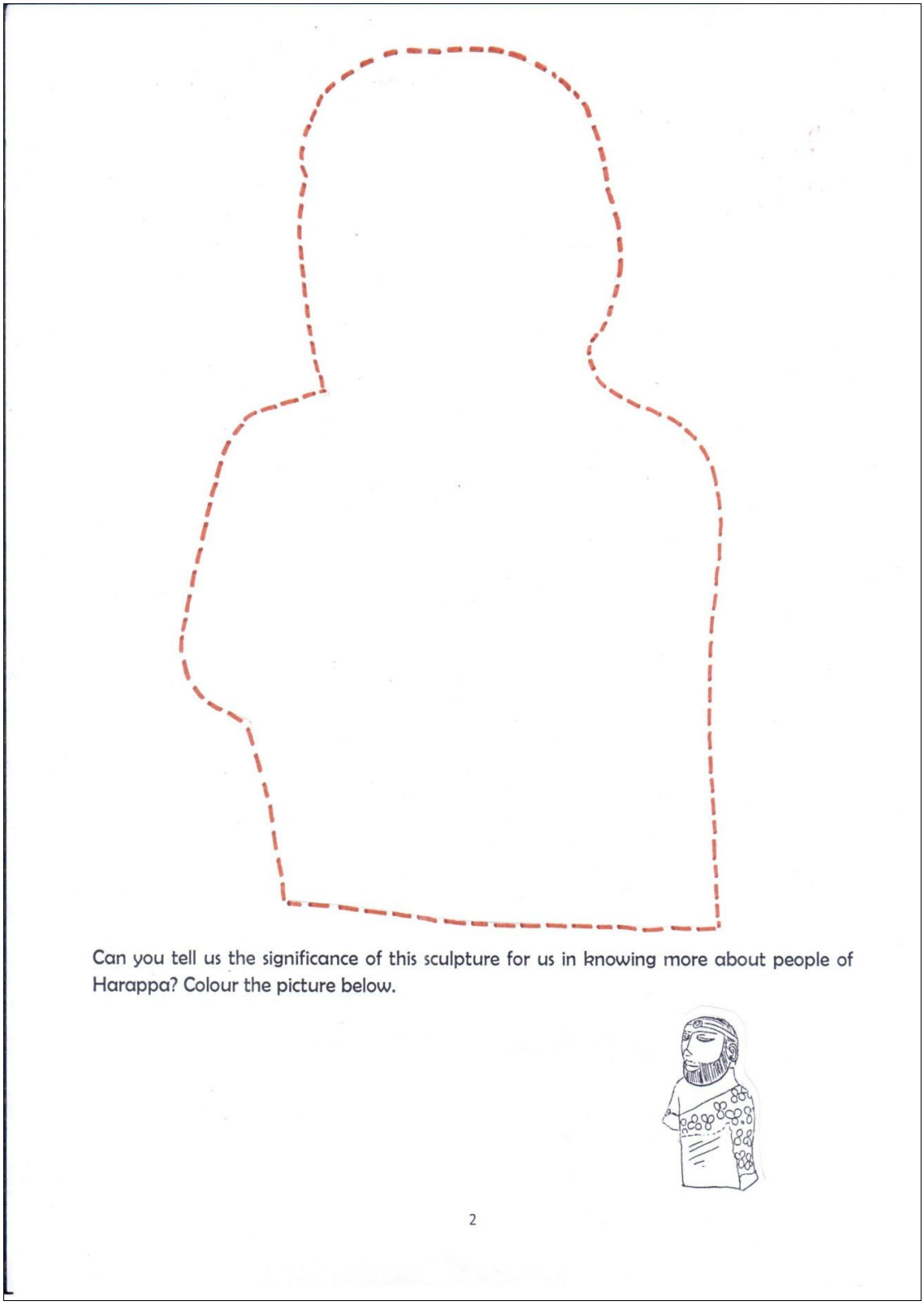
The display pertaining to Pre-historic and Proto-historic collection shows stone tools and replicas of Harappan terracottas, sculptures (bronze & steatite/lime) and seals. This collection can be correlated with the curriculum of school children, a module of activities can be formulated in order to popularize archaeological collection. The display has replicas that can be used as touch tools of learning or similar set of replicas can be used for tactile programs. Quarterly activities can be planned around a single object. A sample worksheet (Fig. 2.4.5 a, b, c) is created for the museum to create interactive activities for the archaeological/ Harappan collection.

Priest King: Piecing the Past Together

You must have observed the Priest king figure in the showcase. Here we have a sticker puzzle for you. You have to rearrange the sculpture back to original form on the next page.

1

Fig. 2.4.5a Worksheet on Priest King (page 1)



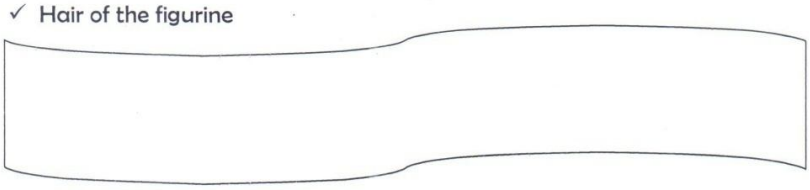
Can you tell us the significance of this sculpture for us in knowing more about people of Harappa? Colour the picture below.

2

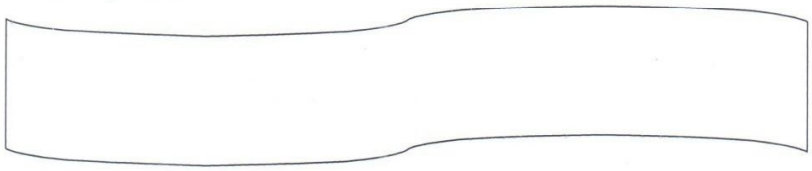
Fig. 2.4.5b Worksheet on Priest King (page 2)

❖ Now let us know what you observe about the

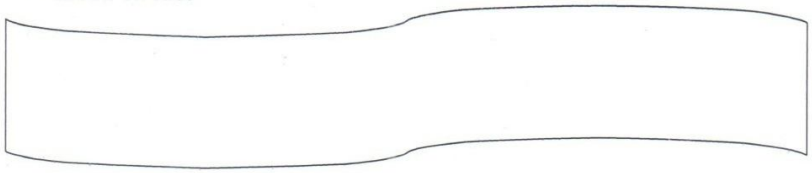
✓ Hair of the figurine



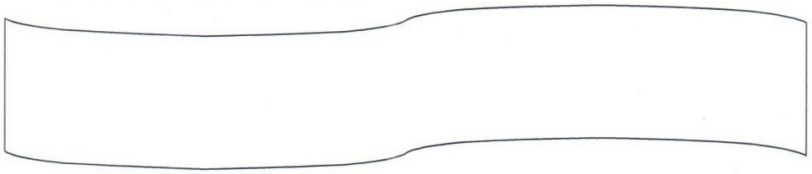
✓ Dress pattern



✓ Mood on face



✓ Status of the figurine in society



Name: Age: Email:

School: Address:

Thank you!

3

Fig. 2.4.5c Worksheet on Priest King (page 3)

Apart from worksheets, one can use the Harappan seals as a source of activity and can make children engage in the writing and trade coding practices of that time and replicating then in clay. Although a simple worksheet and follow up activity, with elaborate information, may add fervour to the display. Children may observe the artefacts on display and draw or describe a particular animal they had observed, or a sculpture they feel is fascinating to them.

It has been a popular concept among many international museums where at the entrance they offer one page worksheet and pencil, which can be used in the galleries. This type of injecting observation and a curiosity development tool enhance the understanding about the display, and generate a sense of appreciation towards archaeological content/ collection. Engaging children with gallery environment allows them to notice those pieces of information, which they miss otherwise. The whole aim is to develop a kind of virtual literacy among children so that once they get an idea of how to observe and gather information, suitable to their level of education and through this kind of continuous and consistent activities they will become future preservers and promoters of heritage.

(iii) FIELD VISIT/ DATA COLLECTION AT SHRI GIRDHARBHAI SANGRAHALAYA, AMRELI, GUJARAT (AUGUST 2013)

Researcher visited Shri Girdharbhai Sangrahalaya, Amreli, (Saurashtra) Gujarat and met Prof. Dodia (Principal of school) on site. Prof. Dodia provided information regarding the collection and services that were offered by the museum to various audiences especially to school groups. A filled questionnaire was later received by the researcher from the institution.

Amreli, a town in the state of Gujarat is of considerable historical and archaeological importance. Shri Girdharbhai Sangrahalaya and its collection, reflects the same. The museum as an idea was first conceived by Hon. Dr. Jivraj Mehta, the first chief minister of the State of Gujarat and was supported by late Padamshri Prataprai G. Mehta, Shri Gangadasji Mehta and Shri Champaklalji

Mehta. The concept of children museum initiated as a small experiment in Amreli, but later it has evolved as a full- fledged scheme (1954-55). The museum is currently housed in a building popularly known as Rangamahal built in 1835 A.D. This museum since its establishment has become a center for many cultural and educational activities. It is as such a movement which gains its relevance from modern practices of education. The museum at Amreli seeks to preserve and display the cultural heritage of the town. The Bal Bhavan started under the aegis of the Shri Girdharbhai Sangrahalaya and is affiliated to the National Bal Bhavan, New Delhi. Bal Bhavan conducts a wide range of activities for children in Music, Arts, Heritage and Astronomy. Also in the vicinity of the complex is Tara Ganga Science Park, and on similar note to enhance the scientific temper among children, travelling science exhibitions were also conducted.

The display at museum comprise of replicas of Harappan seals, TC figurines and archaeological material with map and images depicting sites; replicas of sculptures; coins and related replicas; dioramas on tribes; miniature paintings; toys and natural history specimens (diorama). The archaeological remains during excavation of ancient Gohilwad Timbo yielded beautiful terracotta figurines, red polished pottery fragments, beads, coins of the Kshtrapa and Gupta period, grinding stones of Mauryan origin, conch bangles etc. dating back from 2nd century BC - 5th century AD (Fig 2.4.6). These findings reinforced the need for a modern museum to be established and maintained so as to enable the people of Amreli to cherish their own cultural heritage, and hence the Amreli museum flourish with its multipurpose nature.

Proposed Activities for Developing Learning Environment: Role playing

As Shri Girdharbhai Sangrahalaya is active organisation disseminating arts, science and astronomical knowledge among children and youth, its display that reflects the Harappan and archaeological material, can be made more communicable. The objects are overcrowded in the display case therefore; keeping the key objects with specific information would be appreciable. Also a kiosk or a digital screen setup next to this showcase for providing more in-depth

information of the objects along with context and association with other objects to make a meaningful understanding of the culture could be attempted by the museum/curator. A small space can be setup within the gallery to allow the students to handle some of the replicas and some enlarged images of the objects and a person available to explain the objects on display so as to make the display more communicative and understandable to the visitor. Brief gallery talks and planned visits may increase footfall of students thereby museum play its role better. Connecting links and bringing out significance of collection in connection with the curriculum added by interactive sessions with the archaeologist, scholars of the region or teachers who teach this subject could be effective learning experience. Also as the organisation is active in theatre and drama, some short skits or theatrical performances (Natak) that may be themed on archaeological collection may be created and presented to children to make archaeology an enjoyable discipline. Theatre can bring alive the life of people, their techniques of creating artefacts and the stories behind creating those artefacts. In such dramatic representations, the past to present links and uses of this collection or the idea behind creation of the collection, may be promoted.

Fig. 2.4.6 Researcher recording the showcase display at Amreli.

Role playing involves children studying about some character or event and enacts that episode in a spontaneous manner as if they belong to that time period. In many historical sites such as Roman Bath (UK), and Sutton Hoo (UK) the community groups conduct role play in order to create the experience of a live representation of the historical past. If the children are well informed, they may get inspiration from the archaeological discoveries or the collection unearthed and its significance of the region. Therefore, such theme based short descriptive play or theatrical performance can be planned to spread the cultural awareness among students.

Introducing sessions on recreation of the small artefacts via hands on activities may be included in some occasional events. These are simple ways to motivate children towards archaeological knowledge which is available to them but they seldom utilize it to improvise understanding about past societies. The use of 3D projections and sound & light technology add communicative dimension to any display. Interactive digital screens can be one option which museum can think of implementing. The digital touch screen can be instrumental in making the visitor immersive and gathering information sequentially at the same time discovery basis. Conducting hands on activities/workshops on collection such as 'Seal or Replica' making, showing short films or documentaries adds to the pulling factor of exhibit, thus these workable solutions may make the exhibition interactive. Researcher conducted one such practical workshop at Jahaj Kothi Zonal Museum, Hisar, Haryana that had archaeological collection but less interactive displays.

(iv) FIELD VISIT/ DATA COLLECTION AT THE GOVERNMENT MUSEUM, CHENNAI (APRIL 2015)

The Government Museum, Chennai is one of the most popular sites in city. Though initially it was set up in an edifice on the College Road, Nungambakkam, in 1851 later in 1854, it was shifted to the present locale in Egmore. Today, it proudly stands as the second oldest museum-after the Indian Museum of Kolkata which was set up in 1814. It is a multipurpose museum with eleven sections,

covering both art and science subjects. Sections of the museum include Archaeology, Anthropology, Art section, Numismatics, Botany, Zoology, Geology, Chemical conservation, Design and Display, Education and Children's museum. The museum grounds comprise of six buildings and a total of forty-six galleries for visitors to explore and immerse with heritage. The Government museum is well known for its Bronze collections, Pre-historic ad Proto-historic antiquities (Fig. 2.4.7), Adichannalur Megalithic collections, Amravati sculptures, Indian coinage collection, Ravi Varma paintings and Natural history collections. The Bruce Foote Collection of prehistoric stone tools and many other artefacts from Arikamedu, the colossal skeleton of the whale which was discovered on seashore near Mangalore and the delicate crystal reliquaries from the Bhattiprolu Stupa are put on display. Dioramas depicting 'Man as a tool maker' act as perfect fillers, when visitors are seeing the Pre-historic stone tool gallery. These supplemented virtual images, create a better understanding of an artefact or its function and idea of creation. As present societies are not acquainted with these objects that were effective tools of ancient past. Generation of today do use an improvised version of these tools, with advent of new technologies and process, but the roots of any technology is a significant lesson of the past.

Fig. 2.4.7 Artefacts and replicas of Indus civilization, The Government Museum, Chennai

The Children's Museum is a very special segment dedicated to children in the Government museum, Chennai complex, with three main sub-divisions namely, Civilization gallery, Kids corner and the Transportation gallery. The Civilization gallery is one of its kind as the display of dioramas depicting lifestyles of people of various civilizations of the world. This is a fascinating way to create a sense of visual understanding about the civilizations of the world and make children/ young visitors think about the similarities and differences between them.

Fig. 2.4.8 Indus Valley Civilization display

Fig. 2.4.9 Stone tool maker display

Display at Children Museum section (Fig. 2.4.8, 2.4.9) covers civilizations of the World. Pre-historic gallery display enable children to see various simple and

composite archaeological stone tools. The objects complimented with images make the understanding of archaeological concepts lucid and simpler.

Chennai Museum also has a Museo-bus that displays glimpses of various time periods and collections housed in museum. It covers all themes related to Prehistoric collection, including description on Rock art sites in India. In creative photographic format, accompanied with replicas of objects, the bus is a mobile exhibition that spreads archaeological knowledge even in remote areas of the State. It remains on tour on monthly basis and covers different regions disseminating the significance of museum as an educational source of learning. Luckily during the field visit the Museo-Bus (Fig. 2.4.10; 11; 12; 13) was stationed at museum and the researcher was able to photograph the exhibits on request.

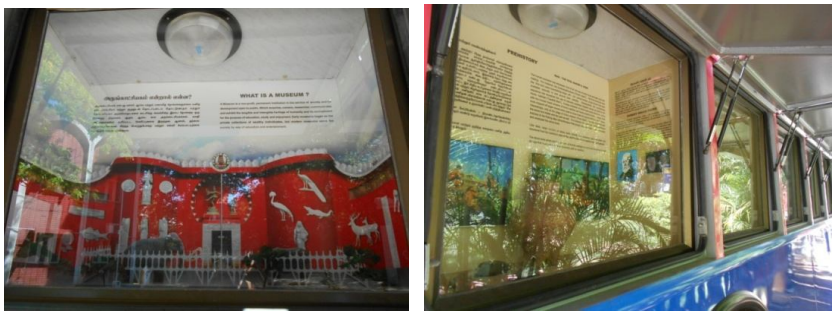


Fig.2.4.10 & Fig.2.4.11 Exterior view of Museo-Bus

Fig. 2.4.12 & Fig.2.4.13 Inside view of Museo- Bus

This museo-bus experience enhance the element of observation whereby replicas are being displayed and complimented with pictorial depictions, makes visitors connect with the societies of past and derive inferences about how they have

evolved as a society in terms of town planning, food habits, clothing and technological advancements including science, writing, art and cultural knowledge. Authenticity of knowing an object out of the 2D book/ textual experience, seeing the actual shape, colour or form, has its own advantages to inculcate cognitive memory. People make connections with the knowledge they had imbibed over the years, as sometimes seeing the real object or an archaeological site. The museum brings these concepts live with innovative and creative display techniques. Studies suggest that seeing real objects are among the satisfying museum experiences reported by visitors (Hohenstein and Moussouri, 2018).

Chennai Museum conducts activities in History Club which is part of various schools in the city. They have e-publications, museum special programs developed to cater to school groups related to their curriculum. They have story telling sessions on themes such as Palaeolithic tools and even show objects to visiting groups from its Reserve collection. They offer objects on loan to schools on request of their headmistress/principal. On site, theatrical performances, audio-visual tours, publications and souvenir counter, aids in creating experiences a memorable affair. Every visitor has some or the other aspect to learn and spread.

Proposed Activities for Learning

Chennai museum offers many educational opportunities to children. The museum had been active in holding lectures, or events like Children film festival, and other regional festivity related programs. They can further develop sources that cater to the children, who wish to explore the nuances of archaeology and ancient civilizations. Museum can conduct exhibitions that are planned and curated by children based on sources they explored. For instance, the Rock Art gallery and Civilization galleries can act as useful sources to learn the motifs of ancient rock art or learn about the architectural elements of construction patterns of various World Civilizations, as displayed in form of Dioramas. Museum could encourage young visitors to approach their schools to set-up learning corners in their schools as well. Different collections related to archaeological themes can be taken into

consideration for the same. The sense of belongingness and clarity of concepts gets developed by all such activities. Engagement of University students to conduct Heritage gallery walks (interactive walks) on various thematic displays can aid in multiplying the footfall. Touch screen kiosks may benefit overall experience to the museum as well.

(v) FIELD VISIT/ DATA COLLECTION AT INDIAN CUSTOMS AND CENTRAL EXCISE MUSEUM, PANAJI, GOA (MARCH 2017)

A notable collection to mention is the display at Indian Customs and Central Excise Museum, Panaji, Goa. The museum one of its kind in country uses digital screens and dioramas apart from the objects to create a sense of understanding among visitors. Presently museum is housed in a place called the "Blue Building" and it was inaugurated on 25th July, 2009. The display that connects archaeology is Customs Heritage Gallery. This gallery provides information on Arthashastra of Kautilya, the ancient trade, ports, taxation system, seals, semi-precious stones and gold beads indicating trade with West and Central Asia and Gulf countries. The visitors are provided with a tour Tablet which can scan the coded labels in front of the displays and hear the description of the displayed idea or object. Also written text label information is visible for those who wish to read on Tab/ digital format. The interesting display is the diorama of Lothal- the Harappan Port Town (Fig. 2.4.14; 15) which connects the practices of trade to ancient times. Further numismatic gallery and sculpture gallery are also noticeable collections that can be part of heritage learning modules.

Fig. 2.4.14 Diaroma of Lothal

Fig. 2.4.15 Stone weights and seals of Harappan civilization

Proposed Activities for Developing Learning Environment: Digital programs for Archaeology

Groups those who visit this museum can be offered digital learning aids like film shows, short documentaries about the port site, Lothal emphasising its collection and significance being the earliest dockyard in Indian sub continent. As tour tablet is a digital source already available with the museum, feeding this device with more historical and archaeological information about the port site especially for children/ school groups may add to the archaeological learning from the site. Children may be provided additional information dealing with trade policies, illicit traffic of antiquities, norms or rules of trade etc. in a very simpler way so that they could connect the resent with the past. The significance of an object as national property and heritage of the country can be showcased within the display through effective panel information with illustrations, leaflets, interactive kiosks devices which will enable the visitor to connect the concepts of customs, trade, economy and early trade connections effectively and make meaning of the museum display and the custom's museum identity. Short documentary can be added in the visual aid (Tour Tablet) that may signify the archaeological heritage. This museum shows that archaeology has so many facets apart from cultural or heritage knowledge. Things can be extracted and learnt from past societies that have crafted these sources for generations to come and experience. Thus, learning in a museum setup is like providing a forum for dialogue and discovery. Museums

function as crucibles for creativity, bringing together visitors and subject matter experts with varying points of view to stimulate dialogue and new ways of seeing (King & Lord 2016).

2.5 SURVEYS & QUESTIONNAIRES

Survey of collection on site and interviews of school children, their teachers and museum staff (educators) were done by the researcher. These interviews were more flexible as interviews allowed a somewhat natural conversation to occur in the research setting similar to the opinion of Hohenstein & Moussouri (2018) having flexibility in the conduction of interviews. Questionnaires vary in nature of data collection as they are easy to distribute, less costly, and possible to collect data in relatively short period of time. The respondents are not under any pressure that they are being watched while expressing thoughts on paper. Through written feedback in the form of questionnaire, rich insights became available in the form of information already gathered during the research.

During the field visits, the questionnaires were filled by the staff at different levels of professional hierarchy in the museum so as to generate data on the type of activities conducted and the facilities that are being provided to school children. The questionnaire enabled in knowing visitor's pattern and profiles, also the reflections on educational benefits and outreach activities of the museum through visitor's perspective were looked in these selected museums. Questionnaires used in Gujarat were answered in local language, Gujarati by the respondents and in Allahabad it was in Hindi as well. Thus the English translation is finally used for the description of the data collected.

The Visitor Feedback Form (Fig.2.5.1) is developed for the facilitators visiting with children/school groups at Allahabad Museum, Allahabad. These questionnaires were filled in hindi format as it was suggested by museum staff that the feedback form may be collected in hindi. (Fig.2.5.2) represent one of the completed/ filled feedback form and (Fig.2.5.3) is the example of the

Questionnaire of one of the facilitators. These resource persons were working in the museum for conducting the education programs and services.

Allahabad Museum

Museum Visit Feedback Form

Date of visit: _____ Name of person/school: _____

Age/Class: _____ Contact No. & Email ID: _____

1. **How did you get to know about Museum activities & services? (Select the options)**

   (a) Newspaper (b) Friend/Relative (c) School (d) Any other source-_____Please mention.

2. **Is this your first visit to the Allahabad Museum? Yes or No. If no, then mention when you have visited earlier.**

   _____

3. **Which galleries of the museum have you seen till now? Please write their names.**

   _____

4. **Which gallery display you like the most and why?**

   _____

5. **Also mention the object that was most interesting for you in the museum during your visit and why you liked it?**

   _____

6. **How did you hear about the educational workshops that the museum provides?**

   _____

7. **Have you actively participated in any of the museum workshops/programs earlier? If yes, mention details (like which & when).**

   _____

8. **Do you have any comments/feedback on your visit to the museum as a whole? (such as on Customer service, location, museum displays, souvenirs, education facilities, other facilities etc.)**

   _____

Thank you for your valuable suggestions! Please visit again!

Fig. 2.5.1 Visitor Feedback form developed by researcher

इलाहाबाद संग्रहालय

संग्रहालय फीडबैक फॉर्म

यात्रा की तिथि : .....
उम्र / कक्षा : 35 वर्ष

व्यक्ति / स्कूल का नाम: अंशुल त्रिपाठी
संपर्क नम्बर और ईमेल : 08765736869
anshultripathi2@gmail.com

1. आप संग्रहालय की गतिविधियों एवं सेवाओं के बारे में कैसे जानकारी प्राप्त करते हैं? (विकल्प चुनें) व चुने हुए विकल्प का उल्लेख करें।
(अ) अखबार (ब) मित्र / रिश्तेदार (सी) स्कूल (डी) कोई अन्य स्त्रोत

(i) अखबार
(ii) कार्यक्रमों में शामिल होकर
(iii) व्यक्तिगत संपर्क से

2. क्या यह इलाहाबाद संग्रहालय में आपकी पहली यात्रा है? हाँ या नहीं। यदि नहीं, तो आप पहले अब आएं हैं कृपया उसका उल्लेख करें।

पिछले 12 वर्षों से जुड़ा हूँ

3. संग्रहालय की कितनी वीथिकाओं से अब तक आप परिचित हुए हैं? उनके नाम लिखिए।

(i) संपूर्ण संग्रहालय से परिचित हूँ
(ii) संग्रहालय के मॉन / सैहान एवं लाहर वाली मूर्तियों से भी एक संवेदनात्मक संबंध है.

4. कौन–सी वीथिका आपको सबसे अच्छी लगी और क्यों?

प्रायः सभी.
अपनी उपस्थिति - स्वरूप एवं अभिव्यक्ति - स्वरूप के कारण.

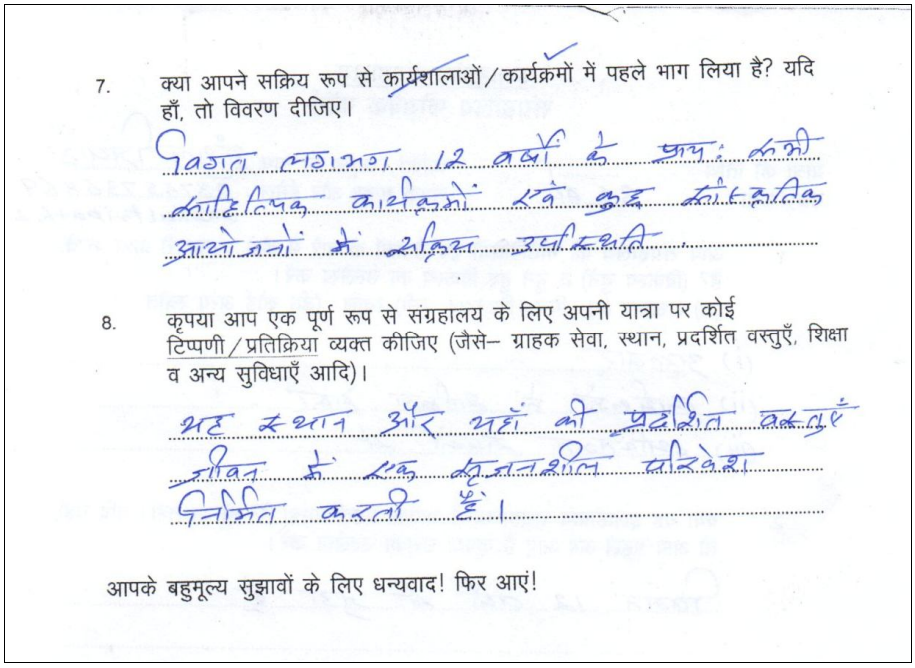
5. संग्रहालय के संकलन में कौन–सी वस्तु आपको सबसे दिलचस्प लगी और क्यों? उललेख करें।

संपूर्ण संग्रहालय में उपस्थित प्रत्येक वस्तु अपने इतिहास एवं संस्कृतिक -संपृक्ति के कारण दिलचस्प है.

6. आपको संग्रहालय की शैक्षिक कार्यशालाओं की जानकारी कैसे प्राप्त होती है?

ऐसे उपरोक्त - (1)

Fig. 2.5.2 Completed Feedback Form, Allahabad Museum (Continued)



7. क्या आपने सक्रिय रूप से कार्यशालाओं / कार्यक्रमों में पहले भाग लिया है? यदि हाँ, तो विवरण दीजिए।

विगत लगभग 12 वर्षों से समय-समय
शैक्षिणिक कार्यक्रमों एवं कुछ सांस्कृतिक
आयोजनों में सक्रिय उपस्थिति

8. कृपया आप एक पूर्ण रूप से संग्रहालय के लिए अपनी यात्रा पर कोई टिप्पणी / प्रतिक्रिया व्यक्त कीजिए (जैसे– ग्राहक सेवा, स्थान, प्रदर्शित वस्तुएँ, शिक्षा व अन्य सुविधाएँ आदि)।

यह स्थान और यहां की प्रदर्शित वस्तुएं
शिक्षा के एक अनुकरणीय परिवेश
निर्मित करती हैं।

आपके बहुमूल्य सुझावों के लिए धन्यवाद! फिर आएं!

Fig. 2.5.2 Completed Feedback Form, Allahabad Museum

The primary aim of feedback forms was to gather information wherever digital or any publication related to education related activities was not available for the researcher. In these situations, researcher used staff as a source of information to derive data that was used to propose and analyse activities for selected museums. The museums which were equipped with updates through published and digital platforms were not given forms as the information was gathered through those sources for proposing activities. The feedback forms collected aided in analysing various aspects of museum that remains in minds of visitors. Resource persons are the point of contact between visitor and museum (administration) thus they can be the appropriate markers of denoting what administration should improvise or continue to keep visitors satisfied and contemplated. Familiarisation of resource person with visitors and functioning of museum, its limitations, strengths etc. can be used by administration to get to know its current and perspective audiences and their expectations. This way the museum may better shape the opinions in society about its collection, significance and uniqueness of existence for the public. In this process the Qualitative set of questionnaires provided deeper insight for object display analysis and variety of programs on offer by the museum.

Respected Sir/Madam,

Please fill in the following details about yourself and answer the questionnaire. This data will be used only for research purpose. (Please do not leave any place for answer as blank).

1. **Personal details**

Name – Mrs. Kaveri Vij

Designation – Art Teacher / freelance Artist

Contact Number – 9415515083 Email ID – Vij.kaveri@gmail.com

Name of organisation - St. Mary's Convent Inter College, Thornhill Road, Allahabad, 01.

2. **About The Museum Program**

i) How many years you have been part of these museum programs?

– 6 Years –

ii) How many days (with dates) this year the program (in which you are resource person) is being conducted? What are its main highlights?

(1) National Painting Camp based on Jamini Roy's work of Art from 25th to 29th April & Painting Exhibition from 5th May to 4th June '13.

(2) Summer Workshop of Art from – 22 May to 29 May '13

iii) What is the mode of teaching in program and material used? Which part of collection/gallery will be used as an aid to the program/workshop?

I teach with the help of black board & chalk & from my memory. Sometimes Painting & Sculpture gallery will be used and Some times previous Workshops and of Course Some time nature (Garden).

1

Fig.2.5.3 Completed questionnaire by resource person, Allahabad Museum

2.6 REVIEW OF MUSEUM PUBLICATIONS AND OTHER PRINTED AND DIGITAL MATERIAL RECORDS

Annual reports of museums act as significant source of secondary data and similar to other museum publications or literature provided to children by the museums. Publications online and literature available (Fig.2.6.1, 2.6.2, 2.6.3a, 2.6.3b, 2.6.3c, 2.6.4) for education through museums to school children was carefully surveyed and studied. This enabled formulating the activities and worksheets with appropriate content as per the age group of children who participated in different activities during Case studies.

Archaeology is being studied in text books during the classes 6^{th} to 12^{th} but a practical or participatory approach is missing in schools. Apart from the curriculum books, it was observed that children developed understanding through occasional visits to an archaeological site, monument or museum. This was the case observed at the schools in Vadodara, Gujarat. The worksheets were planned by researcher to offer children a sense of archaeological learning and was developed using curriculum of various classes as the base. NCERT being a premier institution to offer books all over India, it was first source to refer. The curriculum of social studies and history that was offered to children from 6^{th} till 12^{th} class was thoroughly explored. The Department Museum at the Department of Archaeology and Ancient History, The Maharaja Sayajirao University of Baroda was the first case study used for developing activity sheets, and state board text book selected for the same. State board of Gujarat was also considered to develop pre-visit and post- visit worksheets for children as a pilot study to develop worksheets.

From all the primary experiences, sample questionnaires were developed for local and regional museums in Gujarat. The staff that had been working with groups of children whether they are education officers, coordinators, resource persons or curators all had a different point of view towards developing, planning and

offering programs to children. The main purpose of creating worksheets for children and feedback/questionnaires for staff/ facilitators was to gather data that can be a record of the thoughts and ideas that facilitator seldom share.

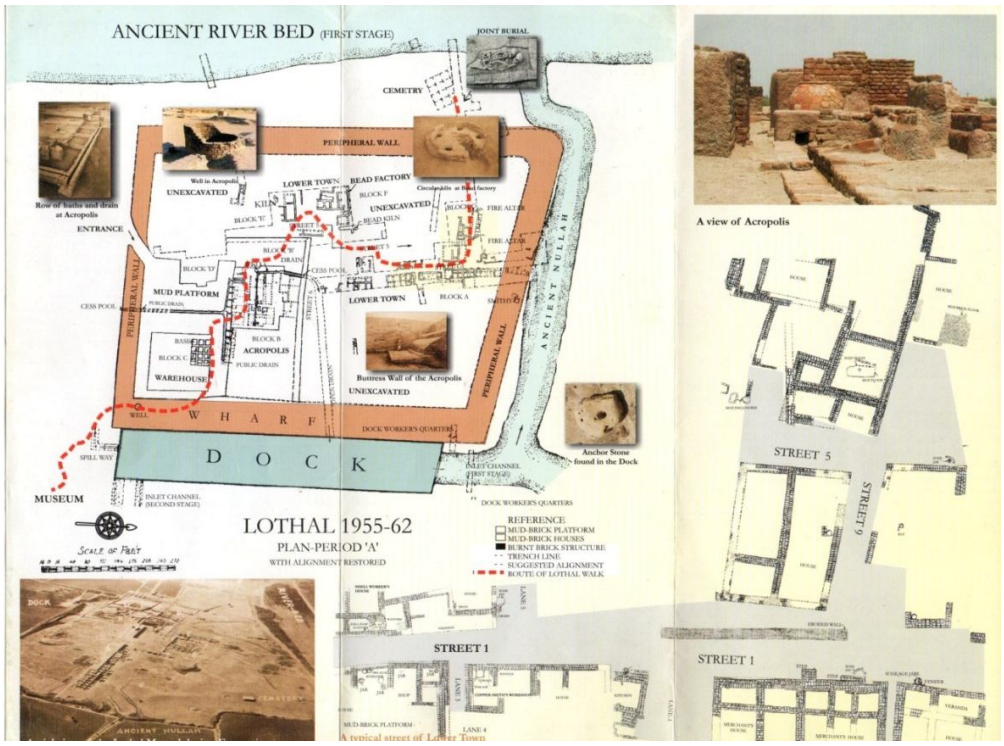


Fig.2.6.1 Information Brochure, Lothal, Gujarat (Courtesy: ASI)

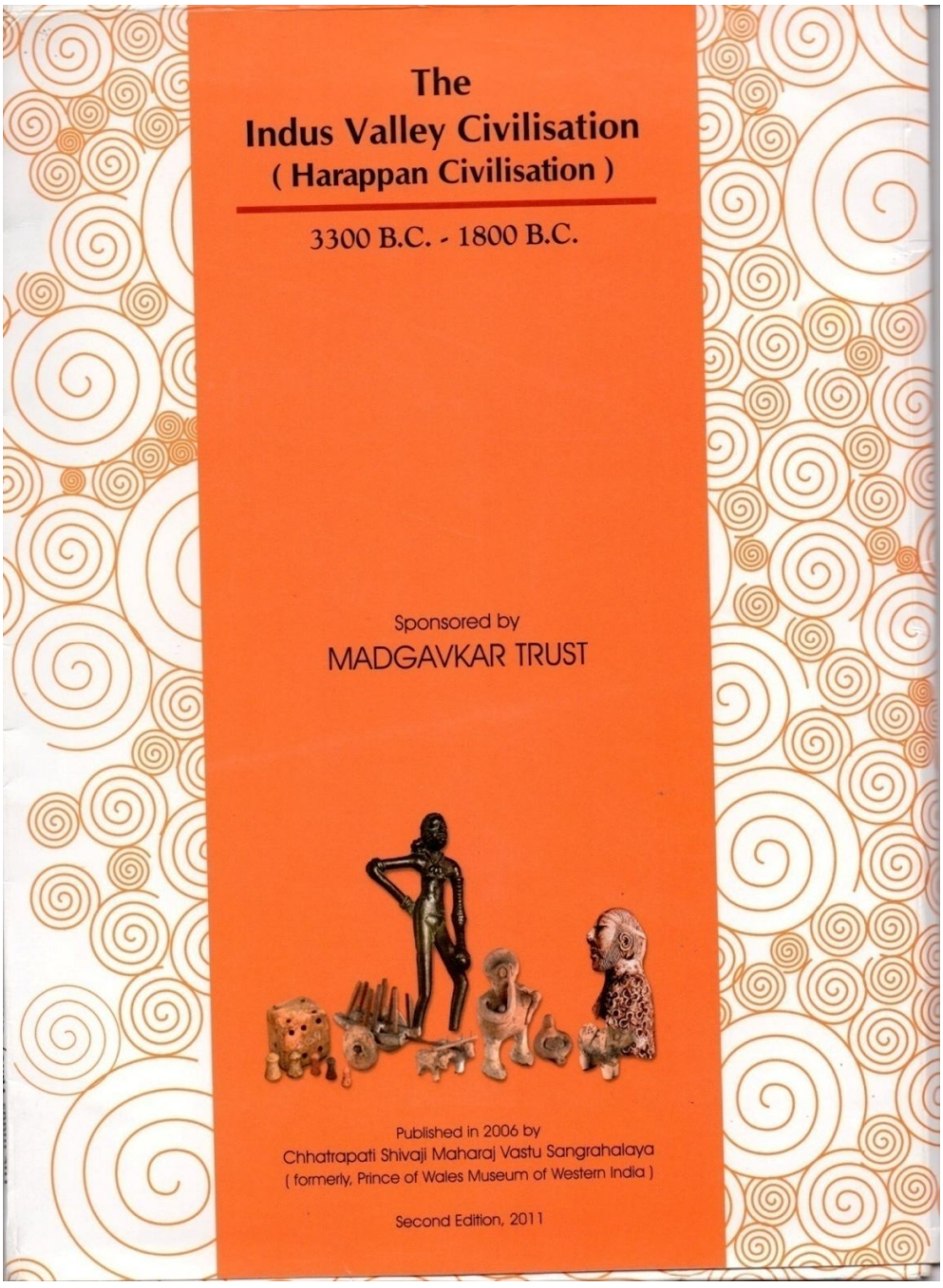


Fig.2.6.2 Resource pack on Indus Valley Civilization, CSMVS, Mumbai.

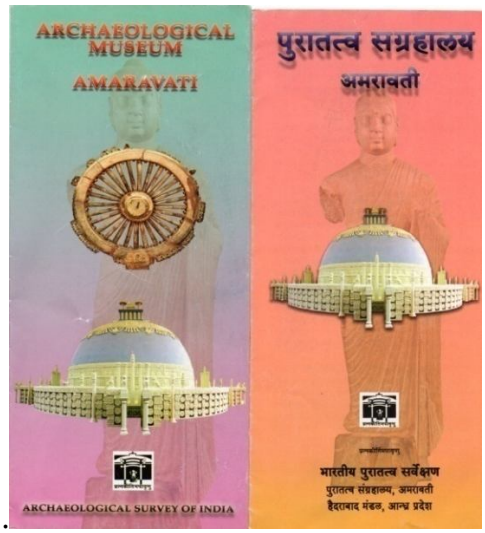


Fig. 2.6.3a

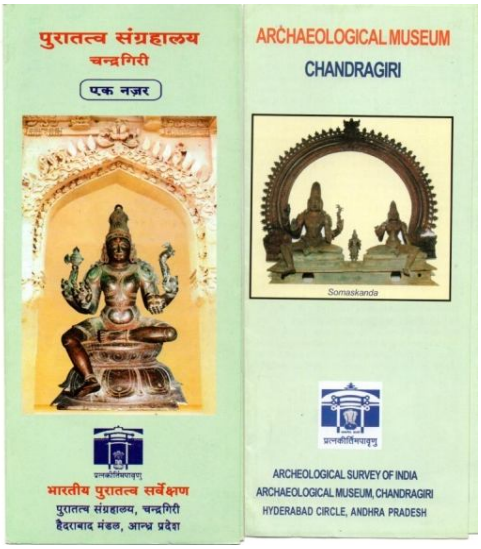


Fig. 2.6.3b

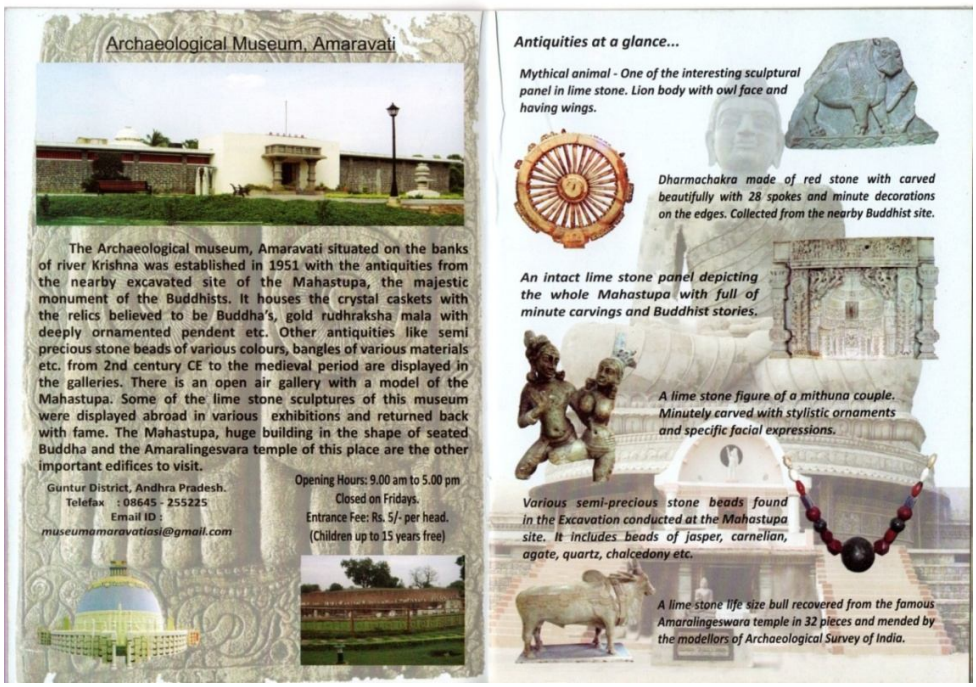

Archaeological Museum, Amaravati
The Archaeological museum, Amaravati situated on the banks of river Krishna was established in 1951 with the antiquities from the nearby excavated site of the Mahastupa, the majestic monument of the Buddhists. It houses the crystal caskets with the relics believed to be Buddha's, gold rudhraksha mala with deeply ornamented pendent etc. Other antiquities like semi precious stone beads of various colours, bangles of various materials etc. from 2nd century CE to the medieval period are displayed in the galleries. There is an open air gallery with a model of the Mahastupa. Some of the lime stone sculptures of this museum were displayed abroad in various exhibitions and returned back with fame. The Mahastupa, huge building in the shape of seated Buddha and the Amaralingesvara temple of this place are the other important edifices to visit.
Guntur District, Andhra Pradesh.
Telefax : 08645 - 255225
Email ID :
museumamaravatiasi@gmail.com
Opening Hours: 9.00 am to 5.00 pm
Closed on Fridays.
Entrance Fee: Rs. 5/- per head.
(Children up to 15 years free)
Antiquities at a glance...
Mythical animal - One of the interesting sculptural panel in lime stone. Lion body with owl face and having wings.
Dharmachakra made of red stone with carved beautifully with 28 spokes and minute decorations on the edges. Collected from the nearby Buddhist site.
An intact lime stone panel depicting the whole Mahastupa with full of minute carvings and Buddhist stories.
A lime stone figure of a mithuna couple. Minutely carved with stylistic ornaments and specific facial expressions.
Various semi-precious stone beads found in the Excavation conducted at the Mahastupa site. It includes beads of jasper, carnelian, agate, quartz, chalcedony etc.
A lime stone life size bull recovered from the famous Amaralingeswara temple in 32 pieces and mended by the modellors of Archaeological Survey of India.

Fig. 2.6.3c

Fig. 2.6.3 a, b, c. Information Brochure of ASI museums

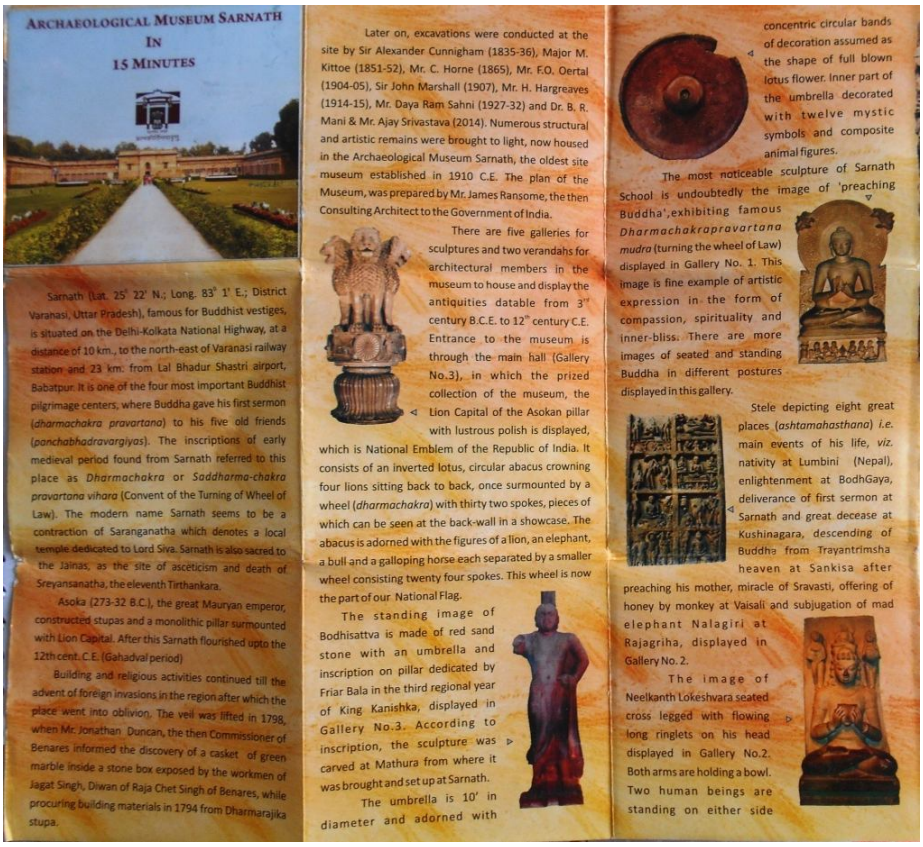

ARCHAEOLOGICAL MUSEUM SARNATH
IN
15 MINUTES
Sarnath (Lat. 25° 22' N.; Long. 83° 1' E.; District Varanasi, Uttar Pradesh), famous for Buddhist vestiges, is situated on the Delhi-Kolkata National Highway, at a distance of 10 km., to the north-east of Varanasi railway station and 23 km. from Lal Bhadur Shastri airport, Babatpur. It is one of the four most important Buddhist pilgrimage centers, where Buddha gave his first sermon (dharmachakra pravartana) to his five old friends (panchabhadravargiyas). The inscriptions of early medieval period found from Sarnath referred to this place as Dharmachakra or Saddharma-chakra pravartana vihara (Convent of the Turning of Wheel of Law). The modern name Sarnath seems to be a contraction of Saranganatha which denotes a local temple dedicated to Lord Siva. Sarnath is also sacred to the Jainas, as the site of asceticism and death of Sreyansanatha, the eleventh Tirthankara.
Asoka (273-32 B.C.), the great Mauryan emperor, constructed stupas and a monolithic pillar surmounted with Lion Capital. After this Sarnath flourished upto the 12th cent. C.E. (Gahadval period)
Building and religious activities continued till the advent of foreign invasions in the region after which the place went into oblivion. The veil was lifted in 1798, when Mr. Jonathan Duncan, the then Commissioner of Benares informed the discovery of a casket of green marble inside a stone box exposed by the workmen of Jagat Singh, Diwan of Raja Chet Singh of Benares, while procuring building materials in 1794 from Dharmarajika stupa.
Later on, excavations were conducted at the site by Sir Alexander Cunnigham (1835-36), Major M. Kittoe (1851-52), Mr. C. Horne (1865), Mr. F.O. Oertal (1904-05), Sir John Marshall (1907), Mr. H. Hargreaves (1914-15), Mr. Daya Ram Sahni (1927-32) and Dr. B. R. Mani & Mr. Ajay Srivastava (2014). Numerous structural and artistic remains were brought to light, now housed in the Archaeological Museum Sarnath, the oldest site museum established in 1910 C.E. The plan of the Museum, was prepared by Mr. James Ransome, the then Consulting Architect to the Government of India.
There are five galleries for sculptures and two verandahs for architectural members in the museum to house and display the antiquities datable from 3rd century B.C.E. to 12th century C.E. Entrance to the museum is through the main hall (Gallery No.3), in which the prized collection of the museum, the Lion Capital of the Asokan pillar with lustrous polish is displayed, which is National Emblem of the Republic of India. It consists of an inverted lotus, circular abacus crowning four lions sitting back to back, once surmounted by a wheel (dharmachakra) with thirty two spokes, pieces of which can be seen at the back-wall in a showcase. The abacus is adorned with the figures of a lion, an elephant, a bull and a galloping horse each separated by a smaller wheel consisting twenty four spokes. This wheel is now the part of our National Flag.
The standing image of Bodhisattva is made of red sand stone with an umbrella and inscription on pillar dedicated by Friar Bala in the third regional year of King Kanishka, displayed in Gallery No.3. According to inscription, the sculpture was carved at Mathura from where it was brought and set up at Sarnath.
The umbrella is 10' in diameter and adorned with concentric circular bands of decoration assumed as the shape of full blown lotus flower. Inner part of the umbrella decorated with twelve mystic symbols and composite animal figures.
The most noticeable sculpture of Sarnath School is undoubtedly the image of 'preaching Buddha', exhibiting famous Dharmachakrapravartana mudra (turning the wheel of Law) displayed in Gallery No. 1. This image is fine example of artistic expression in the form of compassion, spirituality and inner-bliss. There are more images of seated and standing Buddha in different postures displayed in this gallery.
Stele depicting eight great places (ashtamahasthana) i.e. main events of his life, viz. nativity at Lumbini (Nepal), enlightenment at BodhGaya, deliverance of first sermon at Sarnath and great decease at Kushinagara, descending of Buddha from Trayantrimsha heaven at Sankisa after preaching his mother, miracle of Sravasti, offering of honey by monkey at Vaisali and subjugation of mad elephant Nalagiri at Rajagriha, displayed in Gallery No. 2.
The image of Neelkanth Lokeshvara seated cross legged with flowing long ringlets on his head displayed in Gallery No.2. Both arms are holding a bowl. Two human beings are standing on either side

Fig.2.6.4 Printed Leaflet- Information Brochure of Sarnath, Uttar Pradesh

Through the observation of diverse collection of museums both, at government & private administrative setups, the literature surveys and personal observations, all the aforesaid resources the data was generated for research. A preliminary survey of museums in India, through websites of museums, and data from published literature, enabled the researcher to create a path of action to get in touch with associated personnel. After a formal intimation through email, or telephonic conversation, the museums were visited. Observing the types of collection associated with archaeology such as pre- history and proto- history cultural materials, sculptures, coins, inscriptions etc. available in various organisations/museums within India, led to the generation of collective data. Researcher also studied various sources available to children at school level to understand the various dimensions of archaeology. The textbook of social science

from class 6th to 12th of all boards such as state board (Gujarat), CBSE was carefully surveyed.

PART II

2.7 SURVEY OF NON GOVERNMENTAL ORGANISATIONS

Apart from national, state and local level museums, there are many individual organizations that conduct open endeavour for popularizing archaeological heritage through the medium of museum collections catering to various age groups. The second part of this chapter discusses about few of the popular organisations namely, The Sharma Center for Heritage Education (Chennai), Heritage Lab (Chandigarh), Rereeti (Bangalore), Nizamuddin Urban Renewal Initiative (New Delhi), Heritage Trust (Vadodara), and ITIHAAS (New Delhi). Organizations such as INTACH and Sahapedia (Delhi based) conduct heritage walks at various heritage sites and also in museums within Delhi and outside. These organizations also conduct workshops inside the premises of National Museum, New Delhi. INTACH is active in almost many cities and in regions of India and published significant books on heritage education (including archaeology). Sahapedia is an open resource which acts as an online (digital) database of tangible and intangible heritage including archaeologically significant sites and collections.

As per National Curriculum Framework (2005) 'Learning takes place both within school and outside school'. The document recommends partnerships between the school system and other civil society groups, including non-governmental organisations and teacher organisations.

These partnerships may aid in enhancing the impact on curriculum supplement to archaeology as a field of understanding human past. Some of the active organisations are discussed in the following pages.

a) The Sharma Center for Heritage Education (Chennai)

The organisation is active in offering excavation and exploration activities for children. Apart from onsite techniques such as surveying, trench making, mock digging, activities and understanding about stone tools and flint knapping techniques are taught to children and university students, by the foundation. They have publications such as “Shining Stones” (Fig.2.7.1) that is themed around the stone tools and how they were discovered. They emphasise on archaeological methods and collection in major activities conducted by the Center.

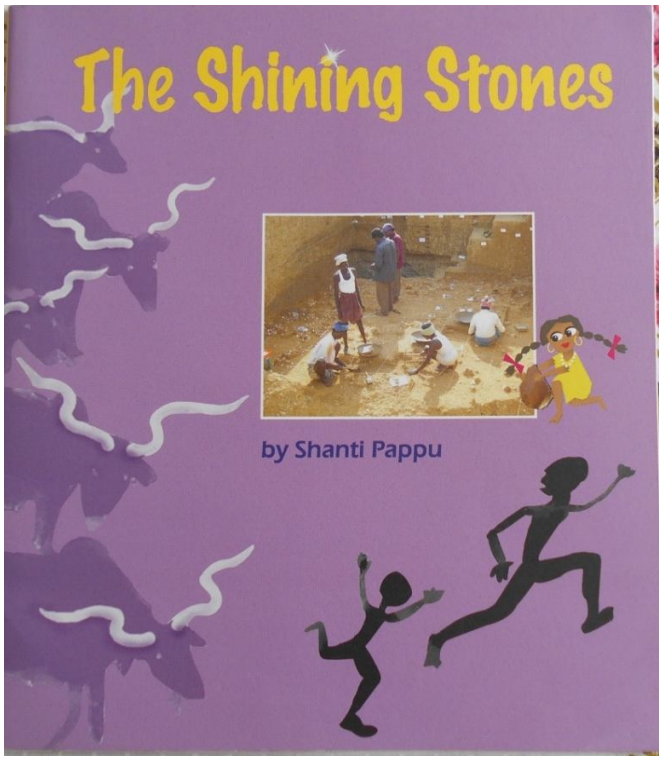


Fig. 2.7.1 Resource for learning Stone tools (Courtesy: The Sharma Center for Heritage Education)

b) Heritage Lab (Chandigarh)

Based in Chandigarh, the Heritage lab offers digital promotion and awareness of heritage collection in museums and on sites. They cover all themes of collection

whether it's archaeological, music, paintings, theatre etc. They create digital sharing platforms and encourage young participants to share and adopt monthly activities that they will share on digital portal. Heritage Lab conducts events like Photo walks, Museum visits etc. that encourage school children and teachers to get acquainted with the sites as well as invaluable heritage.

c) Heritage Trust (Vadodara)

They conduct events in collaboration with schools and encourage young minds to protect and promote heritage structures in the city of Vadodara. Heritage trust also publishes books for children in Gujarati language that reflects glorious heritage past of Vadodara as a city. Researcher acted as a resource person in one of the conducted events that was organised near Navlakhi Vav, in the premises of Laxmi Vilas Palace, Vadodara.

d) Sahapedia (New Delhi)

It is an active organisation that offers scholarships, projects, internships to young minds to participate in developing and contributing data in their digital portal that has admixture of tangible and intangible heritage of India. Sahapedia also conducts events such as museum visits, heritage walks on monuments, and cultural theme based programs that encourage participation in heritage awareness endeavours. They are associated with many schools and museums in Delhi. Now spreading more, Sahapedia is conducting events outside Delhi as well.

e) ITIHAAS (New Delhi)

ITIHAAS work in close association with museums, like National Museum, New Delhi, and offers internships to school children wherein they have to choose a theme and conduct surveys or develop activities to enhance the promotional aspect for the organisation. They also explore to find out, how the visitor footfall can be increased for a particular section or collection, or how quality of exhibition can be improved as per visitor satisfaction.

All above mentioned organisations are active on social media and work in close association with schools and museums. The way of conducting programs vary each year but the innate idea of conducting a program involves around heritage awareness. These organisations are effective catalysts that can aid museums in promoting archaeological heritage. At times archaeology comes up as the least priority theme when promoting collection. Children get more fun exploring arts, crafts, music, natural history etc. which fascinate their senses, and interest in other collections takes a back seat.

For education quality check, improvement and innovations in India, different education policies such as National Policy on Education (NPE 1986, 1992, 2019); National Curriculum Framework (NCF 2005); and World CP-Asia, India (2013) came to light. These policies promote the component of learning of vocational or cultural aspects of the country. NPE (2019) states “All fields of human endeavour, including arts, crafts, and sports, are valuable to both human and societal advancement, and so should be actively pursued by students in their curricula to achieve holistic development”. In this regard the heritage that is imbibed in monuments, sculptures, museums, archaeological sites all play a significant role to make students learn about the ancient arts and crafts of India. Apart from promoting site visits to museums by Directorate of Education, a need to promote archaeological site visits may add to the overall context for those who can observe and experience the strategies and skills behind the excavation, documentation, storage and preservation of cultural heritage.

The National Curriculum Framework (2005) outlines many excellent strategies that are still relevant for accomplishing a more constructivist type of learning. It emphasises on visits to sites outside the school premises such as local monuments and museums, as it suggests that restriction of classroom activities to written texts, implies a serious impediment to the growth of children’s interest and capabilities. In absence of no specific policy, there emerges a pressing need to look into this area of exploration and learning.

2.8 Summary

Students, who learn and study the ancient civilizations, can examine artefacts, create mini- exhibitions in schools, also create photo exhibitions of collection, sites and museum building. They can create connections about lifestyles of past and present. Objects tell lot of stories; students can act as detectives and extract the information hidden in this archaeological heritage. Engaging active young minds in works of museums, like planning events, reorganisation of display, conservation or documentation of collection, are discovery learning aspects that can turn them into future archaeologists and museologists of the nation.

It is essential that children and youth in the country are equipped with the knowledge, skills, attitudes and values as well as employable skills that would enable them to contribute to India's social, economic, and political transformation (NPE 2019). With a combined effort of schools, museums and the NGO organisations, having trained professionals to promote or develop thematic activities, archaeology can be boosted up as an invaluable source of education. The potential of archaeological collection is to be tapped well for generations to get maximum benefit from it and learn about the enigmatic past societies and cultures. The change in perspective of formal education institutions may bring a boost to existing situation of archaeological learning and advancements. This will add to the years our heritage is continuing as an invaluable wealth.

CHAPTER 3
EMPIRICAL CASE STUDIES

3.1 Museum collection as a resource for learning – Practical Participatory Approach

The benefits of learning in a museum setup or on a site, has many aspects that have been discussed by various scholars. Research has shown that museum visitors seek experiences that cross the boundaries of learning, doing, and recreation (Kotler et al. 2008). Learning is the reason people go to museums, and learning is the primary "good" that visitors to museums derive from their experience (Falk & Dierking 2000). Museums are considered as informal learning environments as learning is based on objects and experiences rather than text, which is perhaps the key distinction between traditional school and nonschool learning (Paris 2002). The scenario in India is such that the learning from museums is not an essential aspect of school programs nor included strictly in syllabi. To strengthen our cultural heritage and national identity, the curriculum should enable the younger generation to reinterpret and re-evaluate the past with reference to new priorities and emerging outlooks of a changing societal context (National Curriculum Framework 2005). Thus the role of museum emerges as a non formal institution of learning and teaching.

As per the National Curriculum Framework (2005) 'Teaching should utilise greater resources of audio-visual materials, including photographs, charts and maps, and replicas of archaeological and material cultures'. The social institutions, in which a child is brought up, should make him or her sensitive to respect and promote the heritage richly spread all over the country. Though many multipurpose museums, NGOs and private organisations have been creating active change in this thought process but there is a vast scope of making these institutions as stronger platform for learning of children and youth. Young people in particular want to engage in interactive experiences, which give them the chance to manipulate the museum environment, play games, and participate fully in the museum activities (Kotler et al. 2008). These immersive experiences enhance the quality of learning.

This chapter will highlight the practical sessions that were conducted in order to see how some representative museums use objects/sources to impart the knowledge /awareness/ information of heritage, especially archaeological collection. Based on the data collection and literature survey museums at various levels of administration, national and regional were chosen for empirical studies.

The National level museums were observed active in conducting gallery based activities through their websites and published material. The museums that were visited in regional context were connected to central or state government and were researched on the basis of information available in secondary sources such as museum journals, books, program or exhibition catalogues. This was a survey of websites wherever updated by the organisation was also considered to draw inferences on selecting the particular museum. After going through a proper channel of permissions, the activities were then planned and conducted in museums, on site, in non – government setups and in schools. The case studies were of both types; planned and unplanned. Executing a program or activity sheet module lies on the jurisdiction of the administration and thus was planned as per the situation and time frame available to the researcher.

National Level Case Studies

3.2 CASE STUDY 1

MASK MAKING AND TERRACOTTA ART WORKSHOP AT NATIONAL MUSEUM, NEW DELHI

The nucleus of collection at National museum, New Delhi is the objects that were sent for exhibition from Rashtrapati Bhavan to London in 1947. Museum has a comprehensive selection of Indian art, ranging from the prehistoric to the late medieval periods. There are collections from Central Asia and pre-Columbian art of Americas (Punja 1991). The National museum houses biggest collection of earliest artefacts from various Indus Valley Civilization sites “Harappa gallery” which is the most visited and popular

gallery. The permanent gallery on Harappa comprises of artefacts made up of TC, stone, shell, steatite, metal etc. and at few places the panels, images and maps of archaeological sites of India are also on display.

National Museum conducts regular programs focusing on various collection themes based on their permanent and temporary exhibitions. In last decade, National Museum has conducted sessions on processes like Lost wax casting, stone tool making, bead making etc. that were correlated with the archaeological collection housed in the museum. Museum organised hands on sessions like digging a trench like an archaeologist, tactile tours of reserve collections, theatrical and dance performances during temporary exhibitions, workshops on making replicas of seals etc. that were more or less associated with archaeological collection of the museum. It has been conducting gallery walks and activity sessions apart from special lectures and movie shows on archaeological heritage.

National museum has been conducting programs like poster making, art and craft, madhubani or miniature painting making etc. especially for children on occasions like International Museum Day (18th May), Foundation Day (18th December) and Children's Day (14th November) as part of education dissemination endeavour. These activities were advertised in newspaper and were open to all ages (children). It was outsourced and the facilitators were usually National awardees or artists of eminent status in the field. Ministry of culture was funding agency for all these programs. Programs like 'Know your museum' were popularly organised during the holidays in order to attract and link children to museum. In 2013, an activity on 'Seals and Sealing' was done focusing on seal making technique (replica) that reflected thematic workshop specifically on archaeological collection. National museum had created a kit and had a museo-bus in 1990s that was popular in its time. An exhibition that was conducted on archival images of National museum, is record of those outreach activities of past. Also for training professionals, State museum curators, National museum acted as nodal agency and provided almost a month long program as 'In service course'. Lecture series and summer programs had been a regular feature of museum since 2014.

During work, as an education team member and museum professional in National Museum, researcher acted as an observer and coordinator for some workshops related to archaeology. After gaining this experience, few activities were specifically planned to cater the children that were to explore the new aspect of archaeological and anthropological collections. Apart from the archaeological collection, researcher also conducted two sessions during the annual summer workshops that focused on the anthropological collection of the museum.

Activity 1: Hands on North East Crafts

'Playtime at National Museum' is the summer program conducted in National Museum each year since 2015. This program is specially planned to cater to school level children to learn and participate in hands on sessions based on temporary and permanent exhibition galleries of the museum. It is a regular program that focuses on object based learning.

In 2016 (29^{th} & 30^{th} June 2016), a practical session was conducted related to the arts and crafts of North East India. The dressing patterns, with the significance of accessories, rituals, burial practices, all aspects that were related to craft and dress the people of the region wear, jewellery they adorn, head dress they prefer or the other craft articles, were taught to selected group of children by using paper as a medium.

The session started with Powerpoint presentation and gallery tour by the researcher to provide information of the cultural materials of the region to the students. Mr. Sushmit Sharma, the second co-ordinator of the activity described various practices and meanings that can be derived from the variety of material or colours used to create various dresses, ornaments or religious objects. Then children were asked to do the paper craft techniques by choosing whatever they wish to replicate. Various paper craft techniques were adopted for making the children to do and learn these cultural aspects using museum objects. This was a sort of brainstorming, as many galleries housed at the second floor of National Museum, are less visited by children. School groups usually avoid/overlook these exhibitions due to its location on second floor, thus children visiting the museum miss the aspects of its significance as

valuable heritage of country. These myriad cultural aspects that are still continuing as living traditions are indispensible part of cultural heritage and the ancient practices have deeper meanings that must be preserved, promoted and propagated for generations to keep them alive.

Another program planned at National Museum was based on "Masks" displayed in the various galleries at museum. A significant category namely, 'Masks' in the National Museum collection is also used in special occasions, mark certain events ward off evil spirits or celebrate and recreate historical events. Masks which are invaluable to theatre, drama and enactments of various kinds, are interesting artefacts that signify glorious past and also the present beliefs and traditions of the society. National Museum houses variety of masks in its galleries that are significant evidences of human past. Beginning from a five thousand year old TC mask of Harappan collection, till present day wood, metal or paper machie masks, all reflect the special attribute of the craft being indispensible part of heritage among masses. Metal is used as a popular medium of making sculptures and masks nowadays; these metal masks (usually votive) are used in activities and cultural occasions throughout the country. During summer program 2017, Playtime at National Museum, a session focusing the mask collection was conducted. The activity entitled as 'Carve the Mask' in metal (Fig. 3.2.1, 3.2.2).

The group of children, who were participating, was given a brief tour around the museum showing variety of masks starting from the terracotta masks of Harappa till the dance and ritual masks of various parts of India displayed in Anthropology gallery of National museum. Making this connection was essential to highlight the fact that the mask making traditions has been deep rooted in the heritage of India. Scholars have opined that terracotta masks of Harappan Civilization might have been used for story telling. The expressive eyes, moods and strings attached indicate the practical uses. They might have been totemic symbols as well, but the Mask making tradition is a continuing living heritage. Mask is the tangible form of the intangible heritage preserved since ages.

Fig.3.2.1 Mask carving session

Fig. 3.2.2 Masks created in 'Carve the Mask' activity

Again in 2017, a theatre workshop was jointly organised by National Museum, New Delhi and Herithart (Delhi based theatre group), in which a process based method was adopted with a short performance by the participants of classes 5th to 10th of various schools. The performance revolved around Harappa gallery. The Harappa Gallery at National Museum is one of the most popular galleries and students of various schools, colleges and scholars of various fields are

equally attracted to this gallery explore the collection so as to understand testimonies of the ancient past. To compliment the performance and create props for the final day of theatre, one day workshop on clay modelling was conducted by the researcher that emphasised on the terracottas displayed in the gallery. This workshop was aimed to enable participants to understand and appreciate the artistic skills of the artisans of Indus Valley Civilization. Children recreated almost all varieties of Harappan terracottas including wheeled toys and terracotta bangles. Objects made by the participants were used in the play which not only brought a sense of happiness and encouragement to the children but also enhanced their performance. It was a fun learning process whereby children had active involvement with the concept of artefacts of Harappa. The students receive and imbibe information that must have been highlighted in many books but these kind of activity sessions enable children to learn better being in close proximity of the subject and object. Museums are places where visitors encounter authentic, aesthetic, inspirational, and learning experiences (Kotler et.al 2008).

While contemplating on the practical aspects of hands on session can be very well co-related with school textbooks of children of class 6^{th}. It was observed that curriculum of children of these above mentioned classes having NCERT pattern get a background idea of Harappan toys. Books of NCERT also show terracotta cart and animal (unicorn) figurine mentioned as toys found from the remains of Indus Valley. The NCERT (Class VI) book states that “Many terracotta toys have been found and children must have played with these”. Few such examples are anthropomorphic bird with wheels, birds with cages, climbing monkey, and squirrels on tree stump displayed at National Museum, New Delhi which show movement of the toys in action as well.

Such amalgamation of text, practical activity and object in close proximity of child enables them to imbibe the concept and understand its co-relation with archaeological findings of human past which is in a way their pre-historic culture. Thus such immersive experiences (Fig. 3.2.3) create environment of learning with fun.

Fig. 3.2.3 A participant recreating Harappan wheeled toy in clay, National Museum, New Delhi

3.3 CASE STUDY 2

ALLAHABAD MUSEUM, PRAYAGRAJ, UTTAR PRADESH

The Allahabad Museum located in the picturesque Moti Lal Nehru Park is among the National level museums of India. According to the Annual report of museum, in 2011-12, it was recorded that Allahabad museum is a very active institution in the heart of the city that caters to variety of audiences of different age groups. The museum comprises of sixteen galleries housing a wide range of artefacts. The artefacts on display include prehistoric and Indus Valley antiquities, textiles, terracottas of archaeological sites, stone sculptures, weapons, bronzes, seals, sealings, beads, coins, illustrated manuscripts, miniature paintings, Buddhist Thankhas, medieval land grants etc. There are some important *firmans* of the Mughal kings also on display. The museum displays the documents and related information of Nehru and of the Freedom Movement. The vehicle which carried Gandhiji's ashes to Sangam in 1948 is also maintained and displayed in the premises of the museum.

As an active informal institution of learning, Allahabad museum conducts various summer vacation programs, children week programs, regular screening of documentaries, special lectures, and workshops or programs that directly relate to galleries and collection in the museum. The museum has a modeling section having an array of replicas that are sold to visitors and even sent to various schools all over the country. Modeling section in the museum aids educational institutions and Navodaya Vidyalayas (around list of 300 is in records in adjoining areas) in establishing museum corners under the scheme of Government of India. This concept of creating and promoting 'Heritage corners' in schools by donating replicas is one of the commendable activity of the museum. The concept of 'Heritage corners' indicates that museum is establishing a partnership with school, and combining object based education with classroom teaching. This is an effective way to distribute museum offerings.

Allahabad museum being one of the premier one of its kinds, in India, involves schools and student groups all throughout the year on different occasions. It has skilled and highly qualified staffs to formulate and implement programs that have good response from various sections of society. Museum organizes both academic and non-academic programs that keep the soul of heritage alive and attracts lot of visitors. The Allahabad Museum is committed not only to preserve heritage but also to create awareness among the different sections of the society. To achieve its objective it organizes seminars, symposia, lectures and exhibitions from time to time and publishes its proceedings. Educational short term courses of general nature are organized for the benefit of children & housewives. Short term workshops on clay modelling and painting are organized to stimulate creative instinct among the children. From young to old age persons, this active institution imparts knowledge and services to every section of the society. It has varied displays from prehistoric collection to the modern art, and variety of educational aids like books, information brochures, replicas, documentary shows etc. for promoting and disseminating the significance of collection housed in museum.

The **Art Appreciation** course organized by museum has been introduced in 2011. Its objective was to inculcate the sense of appreciation among people

from various segment of the society towards the cultural property and artistic endeavour of the country. As a part of this venture, illustrated lectures on archaeological exploration and excavation were delivered by museum education and curatorial staff. Other lectures were on lines of art, architectural heritage, Indian Ocean archaeology, conservation and manuscript digitization. During the course of data collection, the researcher could attend the art appreciation classes. In the year 2013, the themes of lectures were architectural and cultural heritage in India, ancient paintings, archaeology as a subject and its meaning (by Prof. V.D Mishra), forts in India, ornamental art, jewellery, folk art, Oman archaeological research project by Dr. Sunil Gupta. This kind of lectures organised by this is a clear indication of the efforts they do for the popularisation of the heritage and archaeological past of India. This also highlights the high quality educational activities offered by the museum.

During the annual summer workshops in year 2013, practical hands on sessions were conducted by researcher from 22nd May to 2nd June 2013. Recently (2019) as up gradation of museum has been initiated, few galleries that were used during the research work practical sessions have been renovated but through the medium of worksheets and photographs, the session can be understood.

The Practical research work done at Allahabad museum consisted of the following aspects;

- information about the museum was gathered from library, museum brochures and other publications,
- gallery surveying was done to check potential material for planning and designing of activities,
- interviewing staff about past activities and guidance about resources available in hand,
- preparation of hands on activity sessions,
- orientation of participants : in auditorium and in galleries,
- activity conduction and participatory observation,
- feedback, conclusions and evaluation.

Detailed Structure of the activity

While gathering information, emphasizing on archaeological collection it was observed that, the Rock Art gallery of this museum had the largest collection of photographs of prehistoric paintings anywhere displayed in India. Valuable possessions of the *Sculpture gallery* had Bharhut sculptures, Buddha and Bodhisattva statues, Bhumara (M.P) Shiva temple remains, and other collection from Kausambi and Jamsot etc. The museum has got a vast collection of terracottas from the important archaeological sites of Kausambi, Jhusi and Bhita. Apart from the actual artefacts the books were referred in library to draw appropriate sketches and create images for PowerPoint presentations for orientation sessions, worksheets etc.

During the *Summer program* workshop from 22nd May to 22nd June 2013, researcher observed and conducted sessions for the study. Summer program was open to all age groups and covered skills related to art, dance, computers, photography and sculpture based on museum collection. It was conducted daily for 3 hours in the museum. The above said month long program made the participants feel interested to explore more galleries of the museum than to concentrate on the activity only. The interested people filled forms as a response to a newspaper advertisement, and were finally selected on 21st May through an interaction cum museum exploration activity with the education section officers at the museum.

Hands On endeavour

Interaction with the school teacher and a freelance artist, Mrs. Kaveri Vij (Fig. 3.3.1) acting as the resource person for the art teaching segment of the summer program conducted by the museum. This was in order to understand the pattern of her session and the idea behind the activity. Mrs. Vij's long time experience with the museum in conducting the activities had provided immense input through questionnaire (Fig. 3.3.2a, b, c) and personal interaction. As per her feedback in the questionnaire, the museum teaching is

different from school as here the elements of Indian art, basics of art and traditional art can also be taught at the same time, since in schools she has to go as per the age/class of children.

Fig. 3.3.1 Interview and interaction with the resource person

Respected Sir/Madam,

Please fill in the following details about yourself and answer the questionnaire. This data will be used only for research purpose. (Please do not leave any place for answer as blank).

1. **Personal details**

Name – Mrs. Kaveri Vij

Designation – Art Teacher / freelance Artist

Contact Number – 9415515093 Email ID – Vij.kaveri@gmail.com

Name of organisation - St. Mary's Convent Inter College, Thornhill Road, Allahabad, 01.

2. **About The Museum Program**

i) How many years you have been part of these museum programs?

– 6 Years.

ii) How many days (with dates) this year the program (in which you are resource person) is being conducted? What are its main highlights?

(1) National Painting Camp based on Jamini Roy's work of Art from 25th to 29th April & Painting Exhibition from 5th May to 4th June'13.

(2) Summer Workshop of Art – from – 22 May to 29 May'13

iii) What is the mode of teaching in program and material used? Which part of collection/gallery will be used as an aid to the program/workshop?

I teach with the help of black board & chalk & from my memory. Sometimes Painting & Sculpture gallery will be used and Some times previous Workshops and of Course Some time nature (Garden).

1

Fig. 3.3.2a: Filled questionnaire by resource person (page 1)

iv) What services that you feel is strength of this museum to program?

To make awareness about Indian Culture & Art among young generation specially School/College Children. Museum Conduct workshops, Camps, Seminars; discussion programs, etc.

v) What kind (age level/class) of group of children/participants are parts of these programs presently?

In this recent Summer workshop there is no age bar limits from 6-7 years to 25-30 years Students has taken part, All are now in Art.

vi) Please give your suggestions for any addition or change in these programs (if any).

length (No.) of days will be increased and proper class room, rest is fine.

vii) Who are the people those who plan or assist in providing these educational services through museum. (E.g. Keeper in Museum/staff members/school teachers etc.)

I think Director of Museum & Keeper & of course staff members helps me time to time.

2

Fig. 3.3.2b: Filled questionnaire by resource person (page 2)

viii) Please mention in brief the significant educational programs that were done in past (2012) in this museum.

Last Year 9 was taken Same Summer - work Shop About 30 to 40 children (different age) was take part. On that workshop 9 teach illustration (how to make picture from Stories).

ix) In your opinion, which section of museum display is informative and education oriented, clear and informative for school children. (Probably most attractive to students those who visit this museum).

9 think, Painting Section and Sculpture Section and of course Nehru Section also attract to school children because it's in their syllabus of Studies.

x) In your opinion how these programs are different when conducted in a school/educational institution or in a museum.

Yes, there is great difference between in School & museum's Programs. In school 9 teach according to class or age wise but in museum 9 teach about Indian art, basics of art and our traditional art also.

Signature: [signature] Date: 26.5.13

Thank you, your contribution is much appreciated.

3

Fig. 3.3.2c: Filled questionnaire by resource person (page 3)

Chalk board was her teaching aid and she made children draw various ornamental designs during the week long session. The students brought their own drawing sheets, colours and other related material for these sessions. Sometimes this kind of program focus on drawing pictures from stories, illustrations and poster making activity.

After interaction with participants and resource person, and observation of the activities during the initial days of the program, lead to the conduction of hands-on activity session for the students on the theme of archaeological collections.

From 29th May to 2nd June 2013, the museum allowed the researcher to serve as a resource person to conduct activities related to archaeological and miniature painting galleries. During the workshop the participants were made to visit 3 to 4 galleries comprising of pre-history collection, sculptural display and miniature paintings. Gallery visits started with orientation to the participants about the displays. Also some kind of audio- visual aids were used for making them understand how to perceive and observe things in the gallery. They were asked to go through the display and thoroughly look and gather information for activity and feedback. In this phenomenon the participants themselves explored gallery, remained active and enthusiastic to get maximum information out of what they see in the exhibits so that they interact more confidently after the gallery visit.

Activity sessions – Prehistory & Protohistory collection

Activity A: Prehistoric gallery (30th May 2013) had collection of antiquities of Indus valley civilization, excavated site Kausambi, material and photographs of rock shelters of India and other objects related to these contexts. This gallery was selected as the first resource as it had good amount of archaeological exhibits that can be used for study and observations.

Day one of the workshop (30th May 2013) was started with a Powerpoint presentation (Fig. 3.3.3) related to display on Indus art and its various art forms. Powerpoint presentation was an admixture of photos of museum collection and comparative antiquities with brief information that served a

purpose to make participants understand the objective of visiting a gallery followed by an activity to perform.

Fig. 3.3.3 Orientation by the researcher for the participants

Fig.3.3.4: Close observation by participants

Participants were given an orientation before entering the gallery. Following that, thereafter a picture card of a showcase display selected from gallery was shown to participants so as to make them understand the important elements to observe in the gallery display. Participants were (Fig. 3.3.4) exploring the gallery collection as per their understanding and age level. Children of lower age group were interested in easier objects like jars, beads, and sculpture as compared to elder participants who read and observed label information and wrote on the paper.

After this exploration, a feedback and interactive session was conducted. Thereafter the participants were given worksheets (Fig. 3.3.5, 3.3.7, 3.3.8) prepared by researcher, to fill in whatever they learnt from the gallery visit. Some participants who needed more time to work on the worksheet, made a point to revisit the gallery and check those information pieces they left out during first visit. This activity enabled the participants to observe and acquire better understanding and learning from objects in a more meaningful way.

Fig.3.3.5: Participant answering the activity sheet

Participants who understood the concept of activity and collection were confidently working with the worksheet and answered well. Few participants described aspects which they felt might have been the reasons or probable answers of certain question in relation to the identity of an artefact or collection. The drawing in Fig. 3.3.6 reflects creativity and observation skills of person in understanding the concept apart from filling worksheet. Here the participant described the objects such as seals, beads, perforated pottery, terracotta cart and bulls, blades etc. the artefacts that she (Srishti) was able to see as part of the exploration activity.

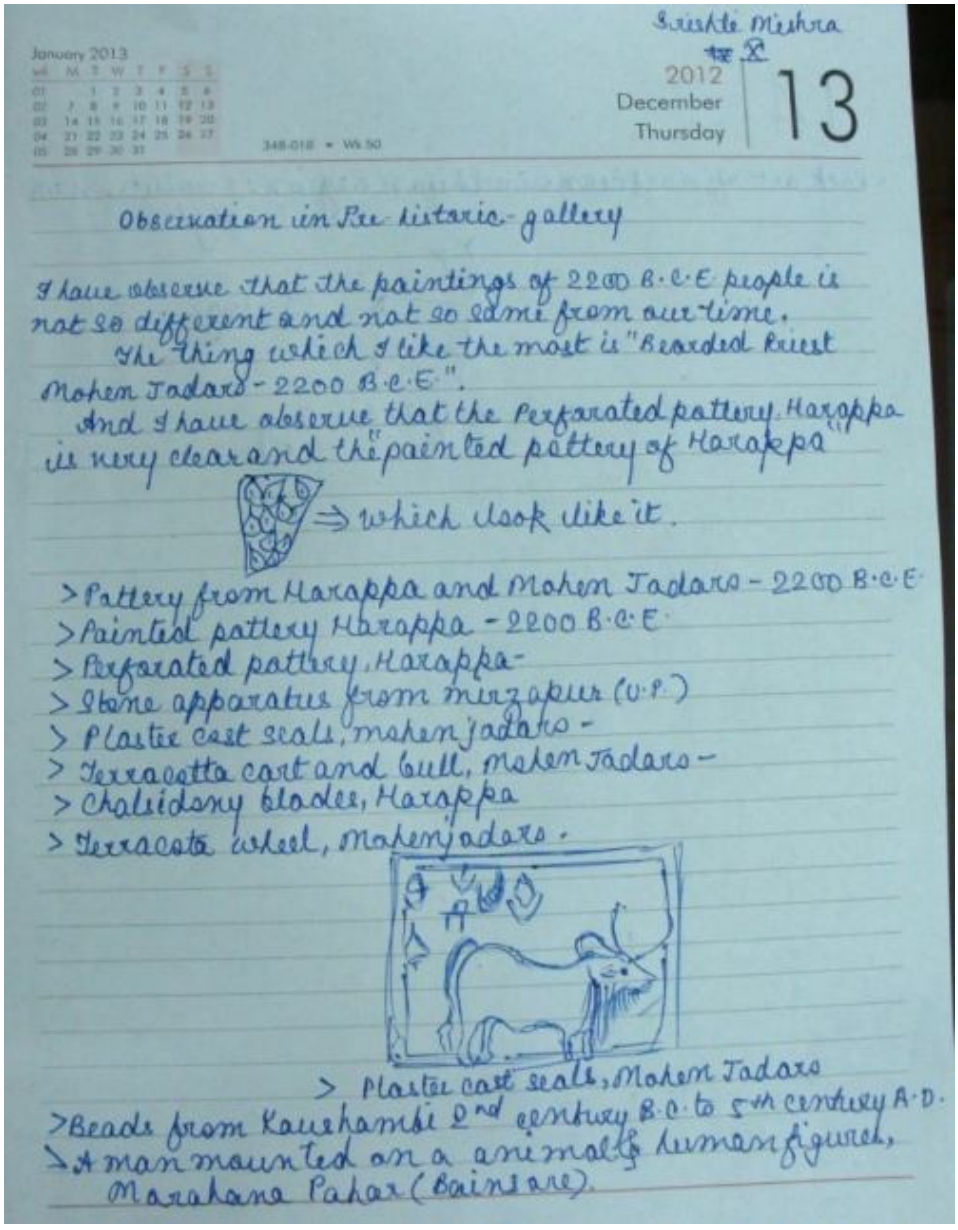
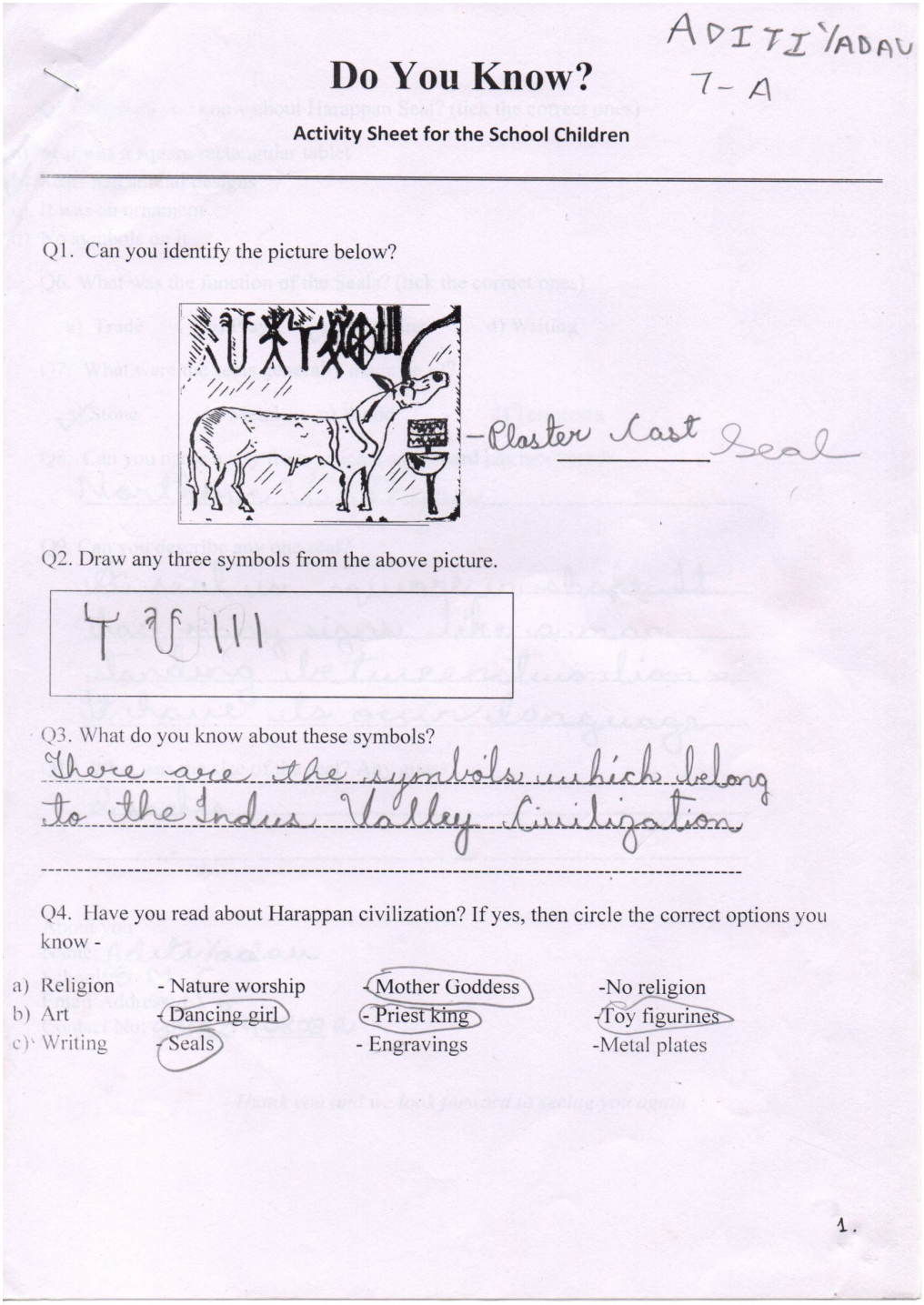

Srishti Mishra
2012
December
Thursday
13
Observation in Pre historic gallery
I have observe that the paintings of 2200 B.C.E people is not so different and not so old from our time.
The thing which I like the most is "Bearded Priest Mohen Jodaro - 2200 B.C.E".
And I have observe that the Perforated pottery Harappa is very clear and the painted pottery of Harappa
⇒ which look like it.
> Pottery from Harappa and Mohen Jodaro - 2200 B.C.E
> Painted pottery Harappa - 2200 B.C.E
> Perforated pottery, Harappa
> Stone apparatus from mirzapur (U.P.)
> Plastic cast seals, mohenjodaro -
> Terracotta cart and bull, Mohen Jodaro -
> Chalcidony blades, Harappa
> Terracota wheel, Mohenjodaro.
> Plaster cast seals, Mohen Jodaro
> Beads from Kausambi 2nd century B.C. to 5th century A.D.
> A man mounted on a animal's human figure, Marahana Pahar (Bainsare).

Fig.3.3.6: Participant's written response



ADITI YADAV
7-A

Do You Know?

Activity Sheet for the School Children

Q1. Can you identify the picture below?

-Plaster cast Seal

Q2. Draw any three symbols from the above picture.

Q3. What do you know about these symbols?

There are the symbols which belong to the Indus Valley Civilization.

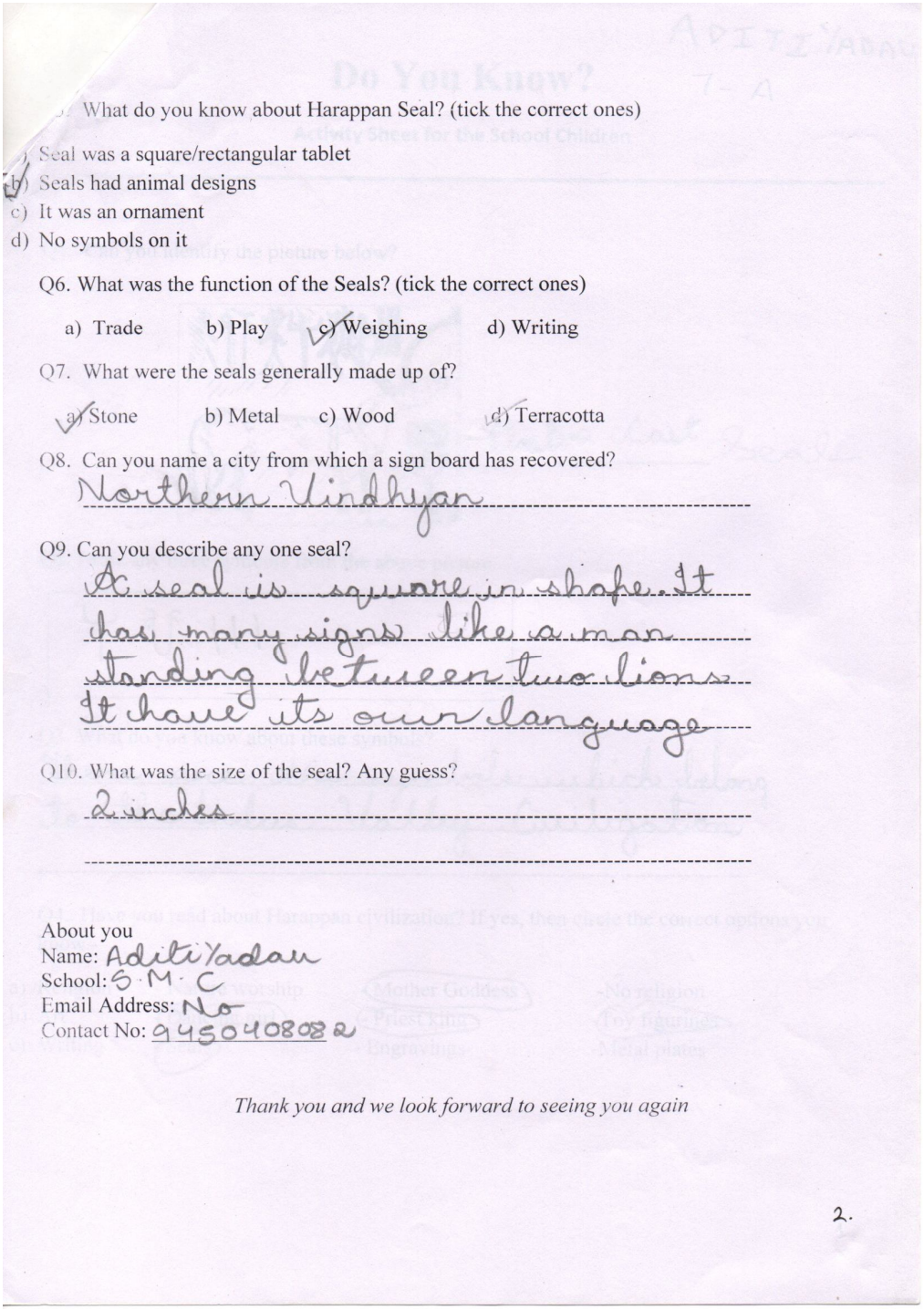
Q4. Have you read about Harappan civilization? If yes, then circle the correct options you know -

a) Religion	- Nature worship	- Mother Goddess	-No religion
b) Art	- Dancing girl	- Priest king	-Toy figurines
c) Writing	- Seals	- Engravings	-Metal plates

1.

Fig.3.3.7: A completed worksheet by the participant (post visit)

In Fig. 3.3.7, the worksheet was designed to get an overview about understanding developed by seeing the seals and other Harappan artefacts in display.



What do you know about Harappan Seal? (tick the correct ones)

a) Seal was a square/rectangular tablet
b) Seals had animal designs
c) It was an ornament
d) No symbols on it

Q6. What was the function of the Seals? (tick the correct ones)

a) Trade b) Play c) Weighing d) Writing

Q7. What were the seals generally made up of?

a) Stone b) Metal c) Wood d) Terracotta

Q8. Can you name a city from which a sign board has recovered?

Northern Vindhyan

Q9. Can you describe any one seal?

A seal is square in shape. It has many signs like a man standing between two lions. It have its own language

Q10. What was the size of the seal? Any guess?

2 inches

About you
Name: Aditi Yadav
School: S M C
Email Address: No
Contact No: 9450408082

Thank you and we look forward to seeing you again

2.

Fig.3.3.8: Page 2 of the worksheet

In Fig. 3.3.8 the participant made a probable guess about the answer no. 8, as this place name and some sites information was available in gallery but the exact answer was not there. Thus through own observation and understanding the answer was given. This reflects that participant was thoroughly looking for the answer and finally was convinced that this was a probable answer.

Participants were enthusiastic and spent quality time to put their creativity onto paper and later their oral feedback was promising. As a token of good work and memorable experience, a souvenir was distributed by honourable director of the museum, Mr. Rajesh Purohit, to all the participants. It was a replica of 'Indus seal' made in plaster cast available at museum modelling section and replica sale counter. This was an antiquity selected from the pre-historic gallery and the theme of worksheet was also the same, thus children correlated with the token of appreciation and its significance.

Activity B: Sculpture Gallery (31st May 2013) had some of most valuable collections of excavated material from Kausambi, Bharhut sculptures, Ekmukhi Shivlinga, sursundaries, and many architectural remains of other significant temple sites. The museum has got a vast collection of terracottas from the important archaeological sites of Kausambi, Jhusi and Bhita. They are valuable material for cultural studies of the period to which they belong. The displayed collection of beads of precious and semi-precious stones, crystal, terracotta and different metals are remarkable for its craft and beauty.

For the second activity, pertaining to gallery collection, participants were shown slides by the researcher to orient them about the sculptures of Allahabad Museum collection and few other sites along with description of various iconographic elements such as ayudhas, facial expressions, hand postures/mudras, pedestals/seats, asanas, mount/vehicle, crowns etc. Participants were advised to search those sculptures in the gallery which they had seen in the presentation apart from other observations as per the activity.

Iconography as the term signifies is the attributes of sculptures of different religions or pantheons. Whether the sculptures are of Hindu, Jain or Buddhist origin; the icons that are represented in the sculpture, aid in deriving information about the powers or qualities of the figurine. It may be a God, demi God, semi God, human, animal, composite or mythical figure and the iconography is a language to study them in depth.

Fig.3.3.9: Participants being oriented by researcher inside the gallery.

Participants were told to select any sculpture of their interest or liking when exploring the gallery, (Fig.3.3.9) and draw it partly or completely along with mentioning the significant information they noticed in the sculpture. The younger children were provided with an outline sketch (Fig. 3.3.10a, b) of the terracotta Mother Goddess figurine in sculptural gallery, and were asked to decorate as they see or like.

Fig.3.3.10a: Outline sketch

Fig. 3.3.10b: Sketch decorated by participant

The outcome of this activity was a rich collection of sketches and colorful expressions (Fig. 3.3.11, 3.3.12).

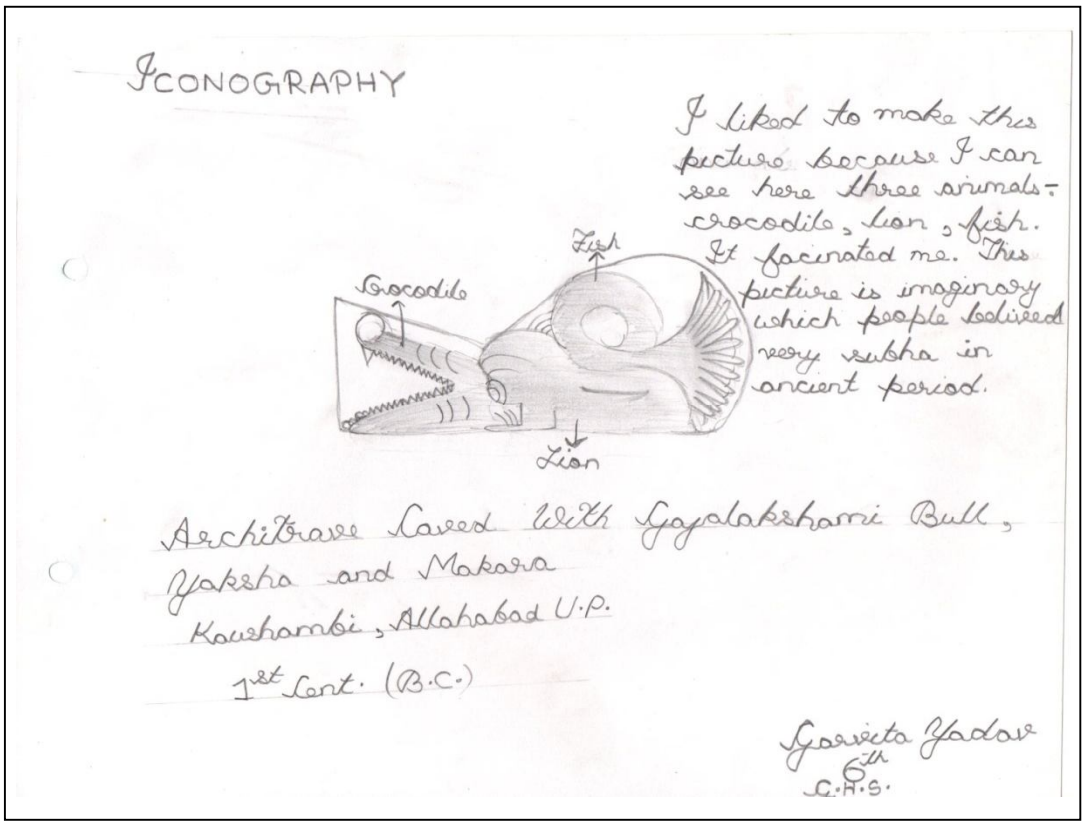

ICONOGRAPHY
I liked to make this picture because I can see here three animals:- crocodile, lion, fish. It facinated me. This picture is imaginary which people believed very subha in ancient period.
Fish
Crocodile
Lion
Architrave Carved With Gajalakshami Bull, Yaksha and Makara
Kaushambi, Allahabad U.P.
1st Cent. (B.C.)
Garvita Yadav
6th
C.H.S.

Fig.3.3.11: Observation written by participant about the sculpture.

This sculpture displayed was a new form of animal looking creature that interested a participant. Researcher described her (Garvita) that this sculpture if carefully observed might reveal to her more than one animal. In process of this interaction, she developed acumen about observing a sculpture and documenting its attributes to learn about its function, origin or association with sculptural art forms. Her simple description was an outcome of whatever she can think of as per her cognitive ability to express and share her experience. This sculpture was an amalgamation of more than one animal, and was a mythical representation, fascinated her and so was chosen as a subject of description.

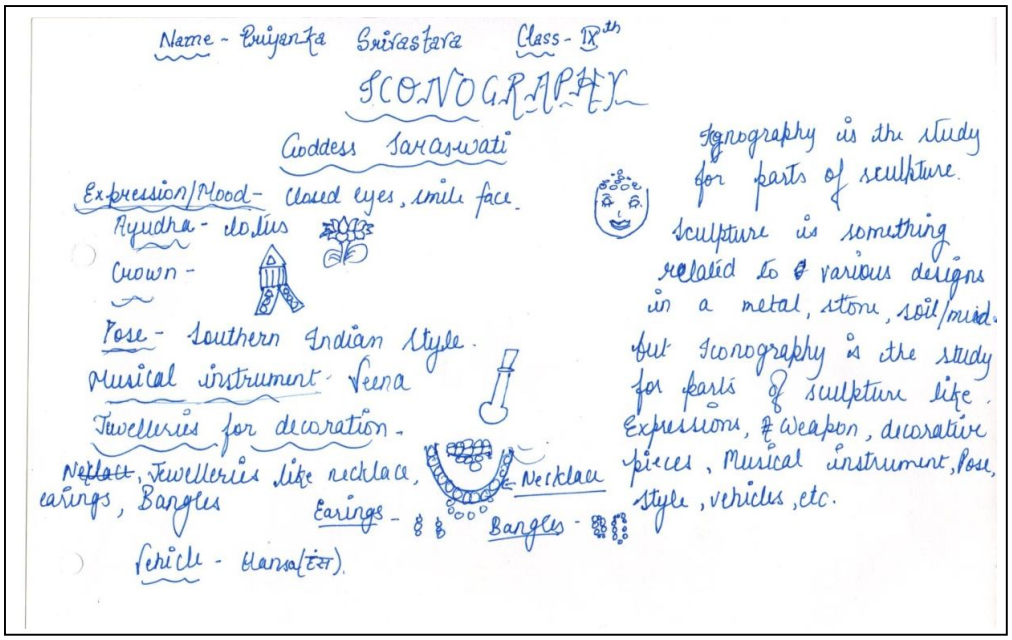

Name - Baijanta Baisastara Class - IX th
ICONOGRAPHY
Goddess Saraswati
Expression/Mood - Closed eyes, smile face.
Ayudha - do.Ius
Crown -
Pose - Southern Indian Style.
Musical instrument - Veena
Jwelleries for decoration -
Necklace, Jewelleries like necklace, earings, Bangles
Earings -
Necklace
Bangles -
Vehicle - Hansa(हंस).
Iconography is the study for parts of sculpture.
Sculpture is something related to various designs in a metal, stone, soil/mud.
But Iconography is the study for parts of sculpture like Expressions, weapon, decorative pieces, Musical instrument, Pose, style, vehicles, etc.

Fig.3.3.12: Iconography – view of a participant as written expression

Through these interactions participants were encouraged to ask questions, explore other collection within the gallery, and select what they like the most. They were making choices to draw those sculptures that seemed unique like the figure 3.3.11. It was observed that, all the participants were choosing varied objects and not sticking to a particular exhibit or an easier shape. They made the appropriate choice for their sketch after the complete visit of the gallery. The sheet in figure 3.3.12, describes how the participant summarised the viewed iconographic features such as, expressions on face, crown, jewellery and designs that were visible, in the sculptures of gallery and finally concluded it as a written observation feedback. Apart from the basic icons, the participant was keen to share the learnt aspects of whole activity i.e. what is iconography and how it correlates in studying a sculpture.

Activity C: Paintings Gallery (2nd June 2013) display collection of miniature paintings, namely, Ragmala miniature paintings, Mughal miniatures, Pahari miniatures and Tanjore. For this gallery activity, participants were asked to notice variety of paintings and the details of flora or fauna, dressing styles, colour schemes, themes and subject matter, or even compare two set of schools. They were asked to give a feedback, written or in oral form.

This gallery made participants think about the lifestyle of people, their art techniques, painting styles and various elements of art and culture of past era that are not surviving any more. Though in some or the other form they are seen but the sanctity has been lost due to the losing interest of new generation who lack the patience or interest which earlier artists used to have.

Conducting such an activity (Fig. 3.3.13) through the museum collection observation, a sense of interest, a spark of knowledge was generated among the participants about this dying art which is a beautiful tangible cultural heritage of our country.

Fig.3.3.13 Researcher providing information to participants in the paintings gallery

The responses from the participants were interesting and varied in expression. Some of them made drawings (Fig.3.3.14) and many wrote comparisons between two schools of Art. Fig. 3.3.14 shows the variety of paintings observed in the gallery. The sketch reflects that the participant was impressed by the depiction of this theme in painting and the drawing was made to emphasize on the same. The presence of bilingual labels is also reflected as recorded by the participant in the same aspect for describing the painting.

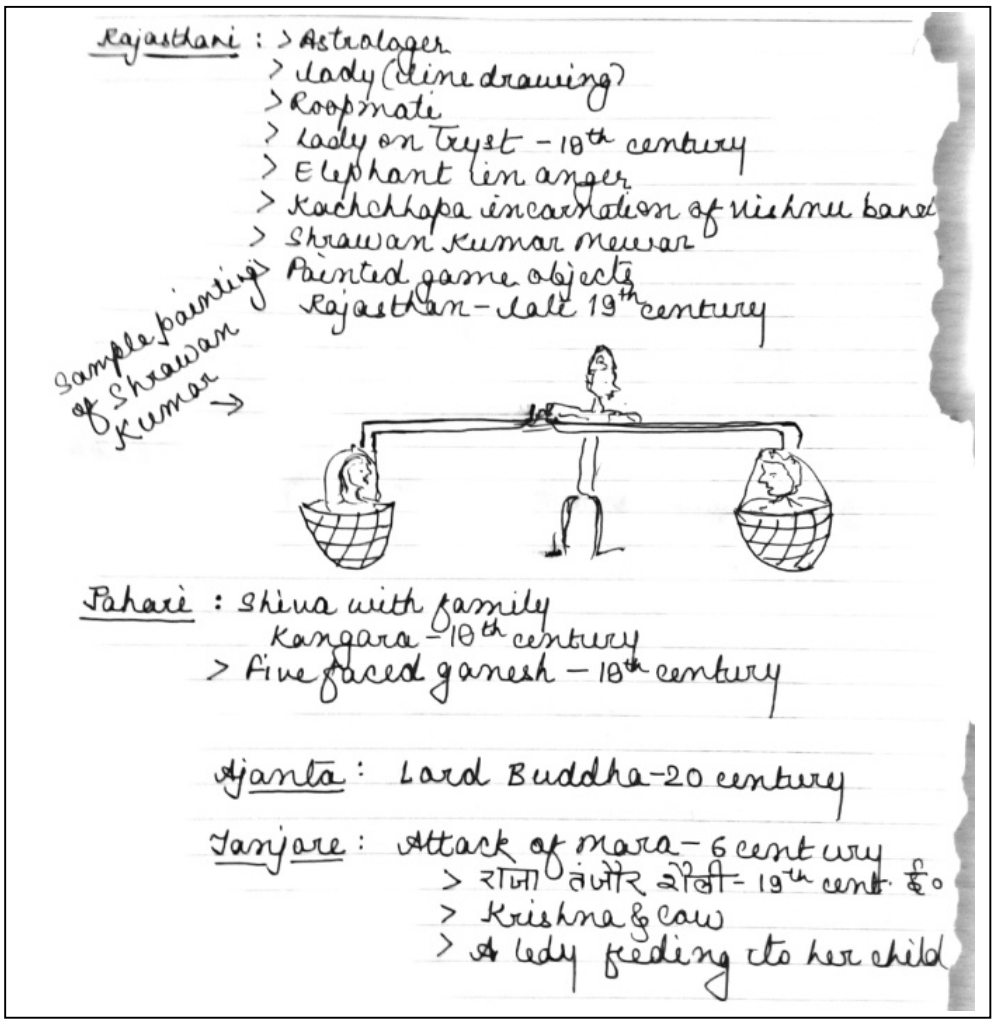

Rajasthani : > Astrologer
> Lady (Line drawing)
> Roopmati
> Lady on Tryst - 18th century
> Elephant in anger
> Kachchhapa incarnation of Vishnu based
> Shrawan Kumar Mewar
Painted game objects
Rajasthan - late 19th century
Sample painting of Shrawan Kumar
Pahari : Shiva with family
Kangara - 10th century
> Five faced ganesh - 18th century
Ajanta : Lord Buddha - 20 century
Tanjore : Attack of mara - 6 century
> राधा और रोकी - 19th cent. ई०
> Krishna & cow
> A lady feeding to her child

Fig.3.3.14 Written feedback by one of the participant

Some wrote the experience of visiting the Miniature paintings gallery and description of paintings. They were curious to know why earlier artists used particular shades of colour, how they drew so minutely, what was idea behind selecting a theme, how the details were so finely made that even get highlighted although size of painting is small. So this interaction within the gallery made children think out of the box and know more about their own heritage evidences.

The summer program museum activities continued for a month and hands on activities were main highlight of program. Participants were having fun as they learn, and were gaining knowledge which was not part of any book, rather part of heritage and society. They were given those experiences to cherish and spread among their fellow mates. This initiative was a form of

heritage ride into own culture and understanding of past through the help of a museum. Thanks to the devoted and hardworking personnel of the Allahabad museum that gave shape to this program into a fun filled yet educative initiative. The Allahabad Museum case study that was focusing on Archaeological learning using galleries as teaching aids, proved out to be a promising feedback and result. The outcomes (Fig. 3.3.15) collected after these activities speak up the effectiveness of learning activity and the artistic and related aspects the participants learned by doing.

The compilation of sketches reflects the observation and understanding developed about the collection and significance of sources that are primary data to extract that information. The participants used cognitive skills and used memory and observation as tools to give shape to their thought processes. These galleries were new experiences for many of them but they gathered information that was rich and descriptive.

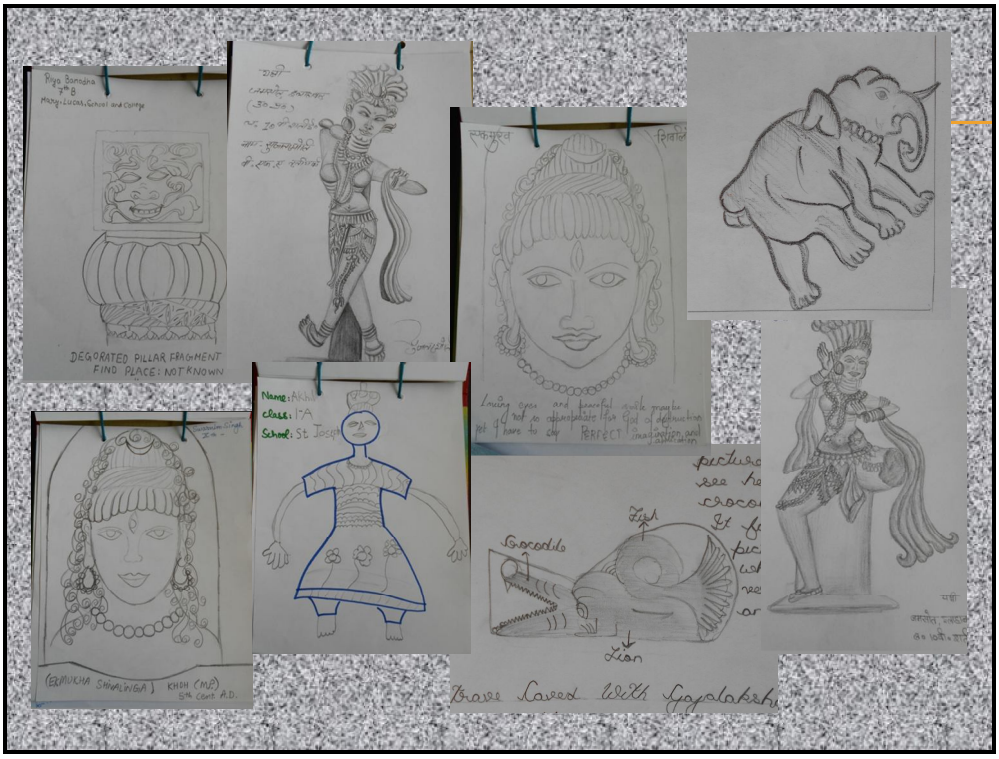


Fig.3.3.15. Sketches created by participants

3.4 CASE STUDY 3

NATIONAL SCIENCE CENTRE, NEW DELHI

National Science centre is a constituent unit of the National Council of Science Museums, Ministry of Culture, Government of India. It is one of the largest science centres in India and is the zonal headquarters of science centres under NCSM in the north zone.

As part of educational and outreach programs, the centre conducts- science drama, popular lectures, quiz shows, debates, science fair etc. at city, state, national level and gives opportunities to make children (especially schools) to participate and visit an informal institution of learning. These programs conducted in collaboration with various schools and organizations, within & outside Delhi, provide an insight about the dynamic attitude and emerging scientific temper of school children. The centre has specially designed galleries that have portions of heritage education. A notable aspect, Museobus is part of centre's educational strategy and one of its activities was recorded for this research. Other available resources such as the library which is rich in variety of books on science & its streams, technology & engineering, computer studies, presentation & exhibition designing, art and heritage etc. and other e-resources, audio-visual sources and various publications was explored. Library has collection of publications on various museums and archaeological studies in textual and digital formats.

Study was conducted to explore the educational endeavour provided by National Science Centre, Delhi through its available resources and gallery exhibitions. As the research is aimed to showcase the significance of museum objects and exhibits for the purpose of educating, about archaeology and heritage, so this active institution provides a myriad variety of programs that enable achieving the aforesaid objective.

For children those who have difficulty in reading, the presentation of objects enable learning the concepts that may not be easily understood through the textual knowledge or written data. Focusing on the same purpose, National Science Centre, Delhi has remarkably developed a unique way of presenting

concepts, which can be experienced through various senses. Understanding is enhanced either by label information or through sense of touch, vision, hearing, etc. The entire area of centre has in total nine galleries to explore, which continue in a sequence, taking the visitor (connecting) move from one gallery to another. Galleries have various hands-on activities of different types that provide a chance of active participation for most of the visitors and immersive experiences.

The centre also organizes various activities and events that facilitate creating interest in the field of science and technology among the youth. In recent years they have developed new galleries and added more digital aspect to the concept of teaching.

The Centre offers **Mobile Exhibition Van** (on request) for far off school students so as to connect them to the information related to science & technology. The Van has been designed to offer the zest of knowledge which different classes of school students can understand, and which will motivate them to visit Science centre. One such visit was observed at Kakrola in Delhi during the course of study. A Science Fair at Government Sarvodaya Kanya Vidyalaya at Kakrola, in Delhi was organized (28/11/2013). National Science Centre Mobile Exhibition Van (Fig.3.4.1, 3.4.2) was sent for benefit of school children there. Based on science themes, the models made by children along with the other “Natak” performances were observed.

Fig.3.4.1 Science awareness programme

Fig.3.4.2 Mobile exhibition van at Kakrola

The main galleries at National Science Centre are showcasing themes of: Emerging technologies; Water: The elixir of life; Information revolution;

Digital information; Fun science; Heritage; Prehistoric life; Human biology; Human life.

A significant part of case study was based on conducting survey & related worksheet filling work and exhibition related feedback of **Heritage Gallery** at the Centre. The gallery "*Our Science and Technology Heritage*" is expressly designed to showcase the rich heritage of Indian Science and Technological contributions.

For the purpose of research, the Heritage Gallery was chosen as it displays India's ancient past in the most elaborate and indepth way. Going through the gallery one experiences the journey of Indian heritage that takes the visitor through amazing discoveries & breathtaking innovations. This journey comes alive as one views these discoveries in various pictorial or model forms, and learns to appreciate the enigmatic facts. Following the footprints of ancient scholars and their vital contributions, this informative gallery has been developed to provide unique glimpses of Indian heritage & scientific growth. This amalgamation of display with selected hands-on exhibits act as perfect means of learning the incredible aspects of Indian heritage with the help of science & technology.

The gallery also has audio-visual aids that enable the visitor to go through the information he/she is interested to embark upon. These audio visual aids begin as soon as one enters the gallery so that visitors are able to make more sense of the display they are seeing. Touch screens are aptly used for bilingual (english & hindi) information display, which enable the visitor to choose as they like. The very first panel on entering the gallery and touch screen is describing archaeological objects and sites. Emphasizing on the diorama and exhibits presented in a highly refined manner, visitors are able to make out the historic and archaeological facts in an efficient communicative mode.

Fig.3.4.3 Replicas on display which showcases Terracotta artefacts of Harappan period

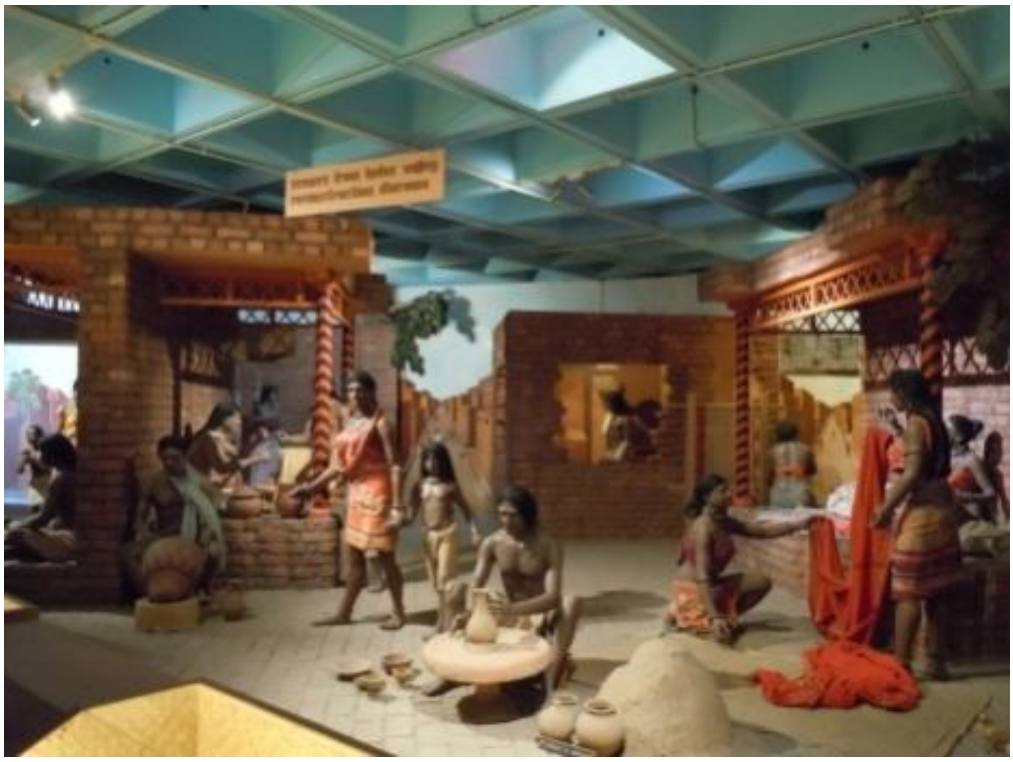


Fig.3.4.4 Diorama of life during Harappan times

This section (Fig. 3.4.3, 3.4.4) showing *Technological traditions of Harappa* was observed as major part of the study as it is concentrating on archaeological display.

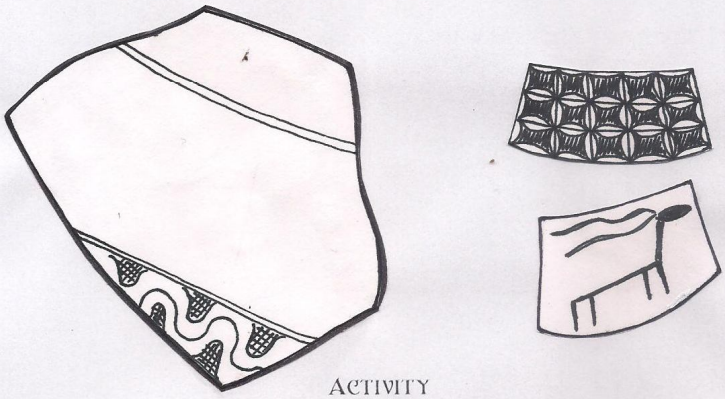
A worksheet (Fig. 3.4.5) comprising of 21 pages, with information and activities, covering all major displays in this gallery was prepared by researcher in order to get a short overview from the visitors especially school children, the information on archaeology and heritage that communicated through labels and displays. The exhaustive booklet was organized, designed and arranged in such a way that single sheets could be used individually for data accumulation. Each child was given single page dealing with different aspects and these were used for data collection. In this manner majority of exhibits were covered and written feedback from the children was generated for study.

The Heritage gallery exhibition is splendidly rich with diorama representations, replicas, reconstructions, informative labels, touch screen multimedia aids, and other audio-visual aids, along with some artefacts, maps and interesting models. As one explores these amazing artefacts, the journey becomes more interesting. Every ancient era of this country is splendidly rich in applications of science and technology. The evidences are present in the fields like astronomy, archaeology, mathematics, surgery, medicines, metallurgy etc. These testimonies made India proud & eternal in the world heritage. Heritage Gallery is like a 'Time Capsule' of these achievements. An educational and informational worksheet for the young visitors to this gallery was developed based on inputs from the display, labels and to link with the school curriculum.

DO YOU KNOW THAT A "POTSHERD" IS A BROKEN PIECE OF POT.? WHEN ARCHAEOLOGISTS SCIENTIFICALLY DIG THE SITES DURING EXCAVATION, THEY OFTEN FIND ARTIFACTS AND GET BROKEN POTS OR POTSHERDS BURIED DEEP BENEATH THE SURFACE OF EARTH.

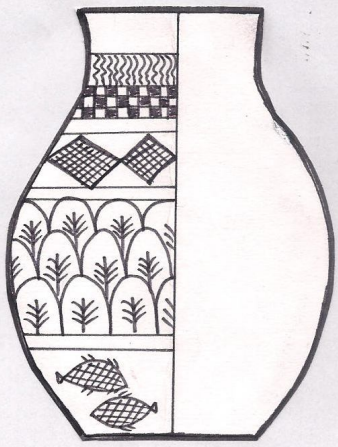
ACTIVITY

HERE IS A POTSHERD DRAWN FOR YOU. COMPLETE THE PICTURE BY DRAWING ANY PATTERN IN IT THAT YOU SEE IN THE GALLERY DISPLAY.



ACTIVITY

LOOKING AT DESIGNS IN GALLERY, COMPLETE THE PICTURE OF JAR BELOW.



Harappan pottery had variety of animal, plant or geometric motifs. A few designs are drawn for you to have a look.

Fig.3.4.5 Worksheet on pottery

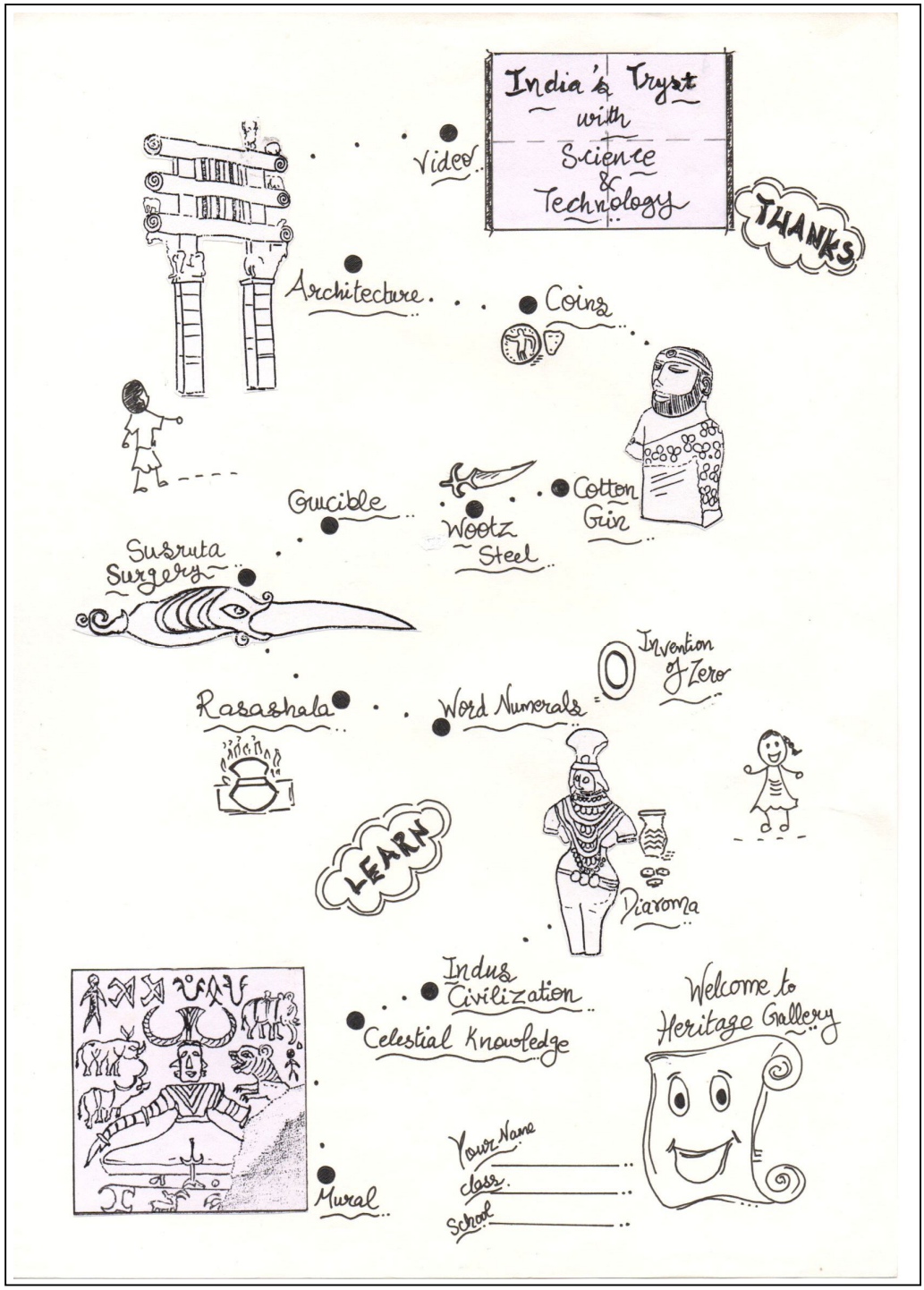


Fig.3.4.6 Front page with highlights of Heritage Gallery

The worksheet was designed in such a manner that with brief introduction of gallery and highlights of exhibits, a simple plan (Fig.3.4.6) was also put in that reflected the diverse nature of displays. First page of worksheet showing gallery plan reflecting the displays of gallery and highlighted portions for observation and activity purpose.

As described in introduction panels in gallery, the Indus Valley Civilization featured urban planning, a rich layer of standardized material culture, the world's earliest writing system, carefully planned residential complexes with wastewater systems, special shapes and decorative styles of ceramic vessels and an array of products from sophisticated craft industries.

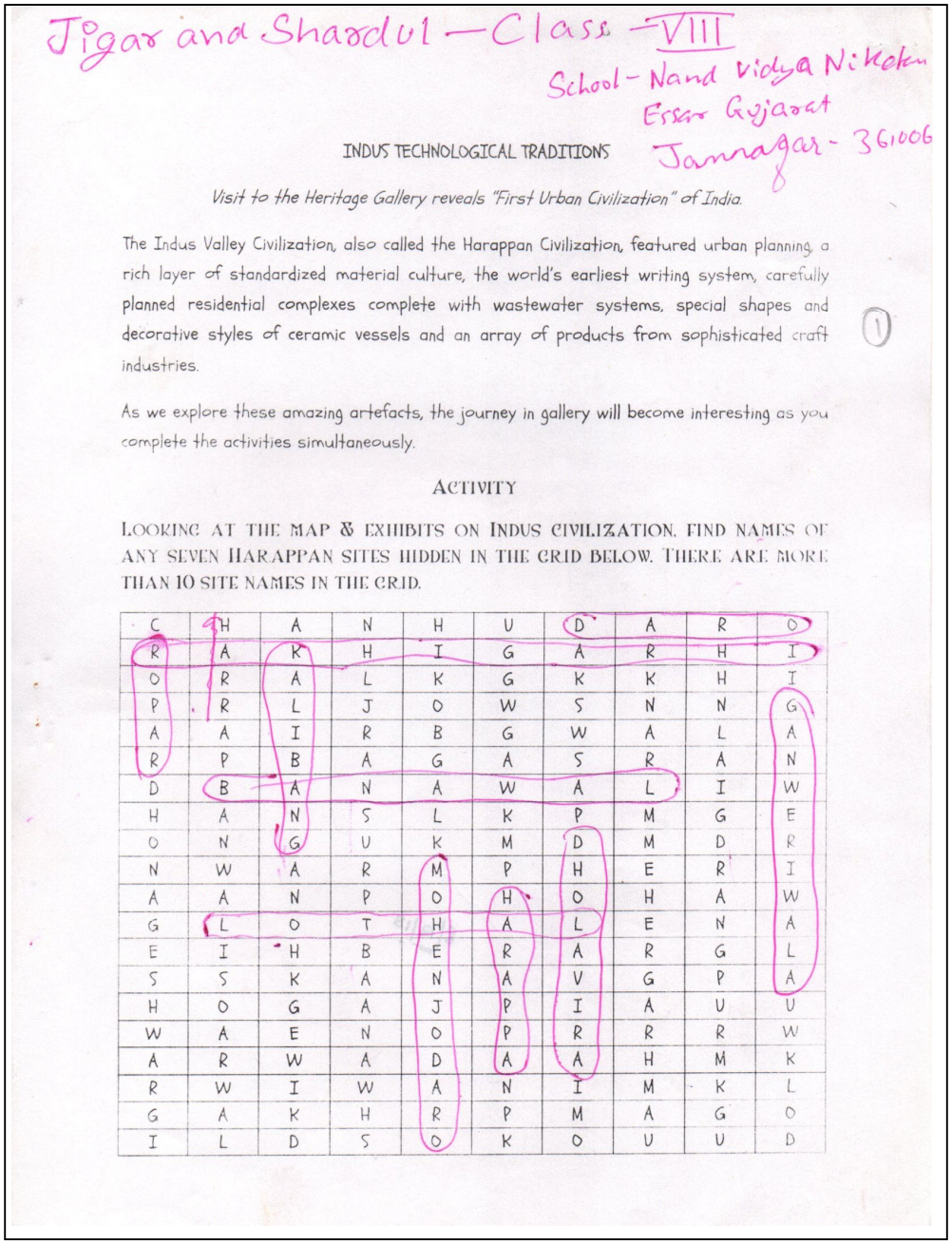
Researcher acted as a resource person and oriented children about the significance of archaeological display and the purpose of this section being the first in Heritage gallery. The details of technological traditions are described all over in this section along with replicas in showcase displays. The purpose of study was briefed to students visiting the gallery and the written completed form of sheets was compiled for analyzing the clarity available in display and information observed by children.

Initial pages of worksheet emphasized on the technological traditions described in gallery. The children were given brief overview about how to search for the information asked in the worksheet. Thereafter a brief interaction enabled the researcher to know about the interests of the person and purpose of their visit.

Students visiting gallery were selected to do a page of worksheet. It was observed that those visitors that had read (in school) some or the other aspects of heritage displayed in gallery were more enthusiastic to do and complete the worksheets (Fig.3.4.7, 3.4.8). Children above 10 years were selected for the activity.

Fig.3.4.7 Children undertaking worksheet activity

Fig. 3.4.8 Display objects being observed for worksheet completion



Jigar and Shardul — Class — VIII
School - Nand Vidya Niketan
Essar Gujarat
Jamnagar - 361006

INDUS TECHNOLOGICAL TRADITIONS

Visit to the Heritage Gallery reveals "First Urban Civilization" of India.

The Indus Valley Civilization, also called the Harappan Civilization, featured urban planning, a rich layer of standardized material culture, the world's earliest writing system, carefully planned residential complexes complete with wastewater systems, special shapes and decorative styles of ceramic vessels and an array of products from sophisticated craft industries.

As we explore these amazing artefacts, the journey in gallery will become interesting as you complete the activities simultaneously.

ACTIVITY

LOOKING AT THE MAP & EXHIBITS ON INDUS CIVILIZATION, FIND NAMES OF ANY SEVEN HARAPPAN SITES HIDDEN IN THE GRID BELOW. THERE ARE MORE THAN 10 SITE NAMES IN THE GRID.

C	H	A	N	H	U	D	A	R	O
R	A	K	H	I	G	A	R	H	I
O	R	A	L	K	G	K	K	H	I
P	R	L	J	O	W	S	N	N	G
A	A	I	R	B	G	W	A	L	A
R	P	B	A	G	A	S	R	A	N
D	B	A	N	A	W	A	L	I	W
H	A	N	S	L	K	P	M	G	E
O	N	G	U	K	M	D	M	D	R
N	W	A	R	M	P	H	E	R	I
A	A	N	P	O	H	O	H	A	W
G	L	O	T	H	A	L	E	N	A
E	I	H	B	E	R	A	R	G	L
S	S	K	A	N	A	V	G	P	A
H	O	G	A	J	P	I	A	U	U
W	A	E	N	O	P	R	R	R	W
A	R	W	A	D	A	A	H	M	K
R	W	I	W	A	N	I	M	K	L
G	A	K	H	R	P	M	A	G	O
I	L	D	S	O	K	O	U	U	D

Fig.3.4.9 Completed worksheet on Harappan sites

To create an understanding related to the spread of Harappan civilization and its key sites, the introduction worksheet (Fig. 3.4.9) was designed. The motive was to make children aware of the features of an urban civilization that were reflected in various sections of Heritage gallery.

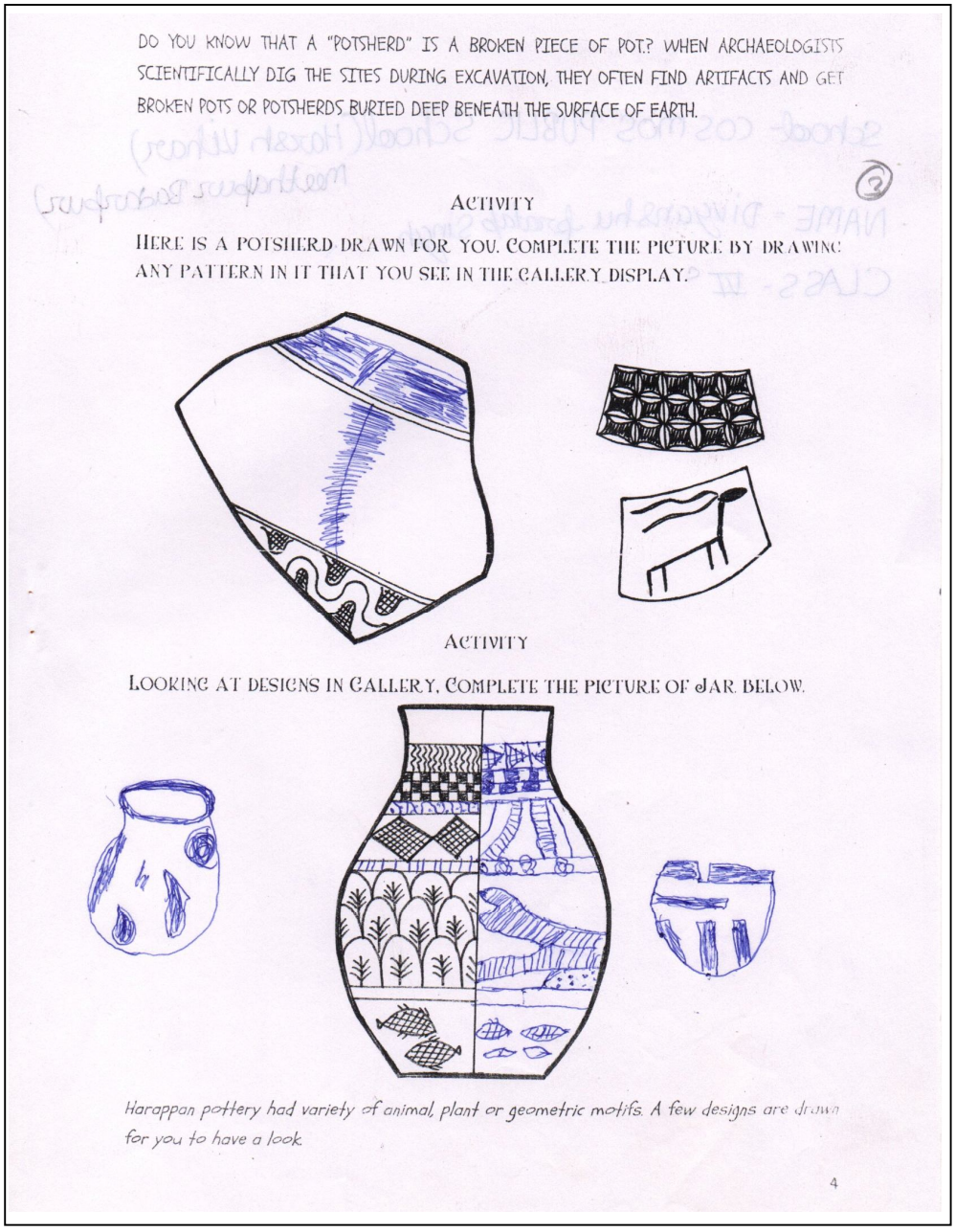

DO YOU KNOW THAT A "POTSHERD" IS A BROKEN PIECE OF POT.? WHEN ARCHAEOLOGISTS SCIENTIFICALLY DIG THE SITES DURING EXCAVATION, THEY OFTEN FIND ARTIFACTS AND GET BROKEN POTS OR POTSHERDS BURIED DEEP BENEATH THE SURFACE OF EARTH.
ACTIVITY
HERE IS A POTSHERD DRAWN FOR YOU. COMPLETE THE PICTURE BY DRAWING ANY PATTERN IN IT THAT YOU SEE IN THE GALLERY DISPLAY.
ACTIVITY
LOOKING AT DESIGNS IN GALLERY, COMPLETE THE PICTURE OF JAR BELOW.
Harappan pottery had variety of animal, plant or geometric motifs. A few designs are drawn for you to have a look.
4

Fig.3.4.10 Completed worksheet on pottery designs

Harappan pottery is prolific in decorative motifs be it in form of flora, fauna or humanlike designs. To give an understanding about the myriad aspects of pottery designs, the worksheet (Fig. 3.4.10) was created that motivated respondents to use imagination and draw some patterns of their own. The aim was to make children observe and learn the patterns.

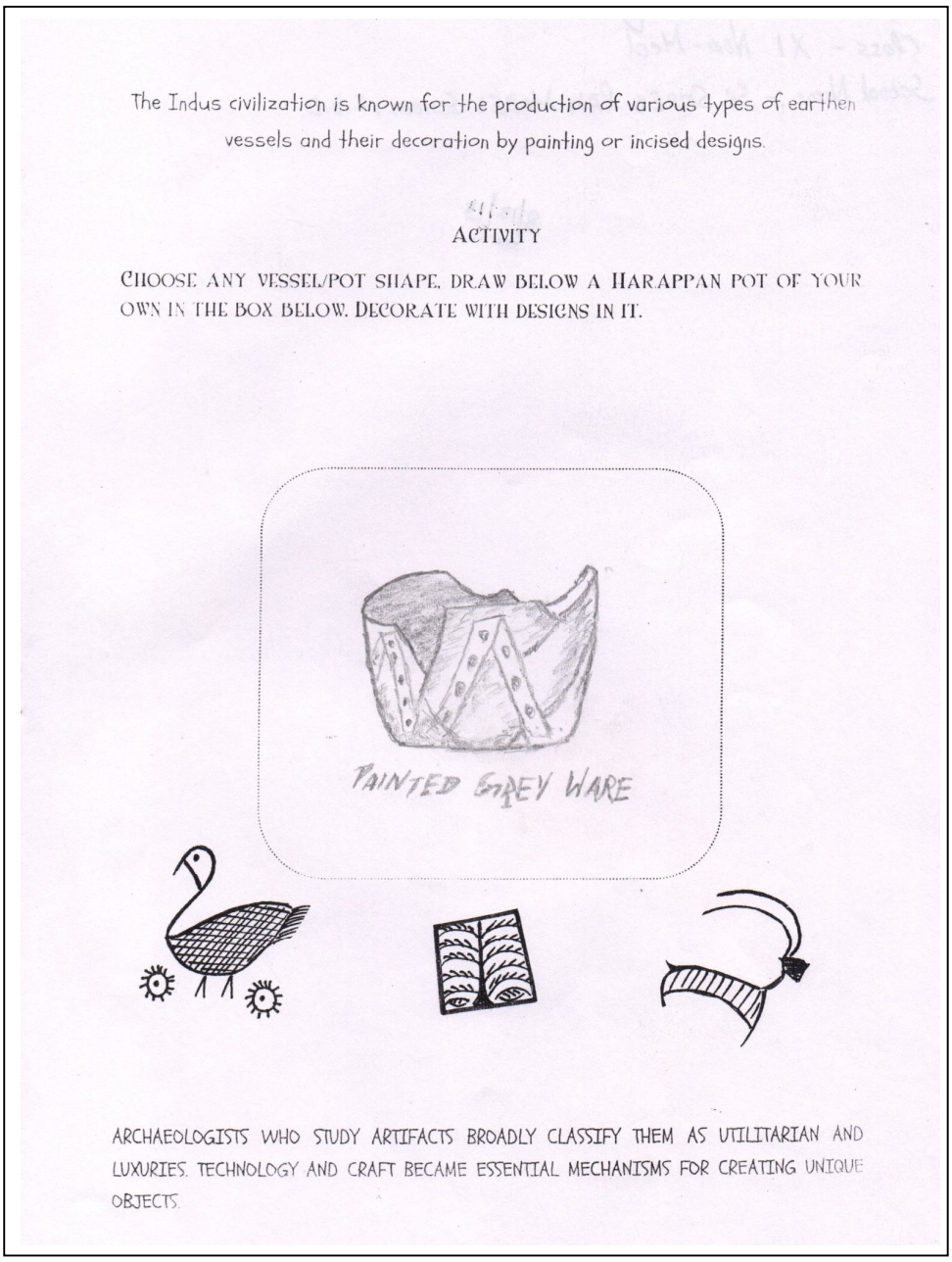
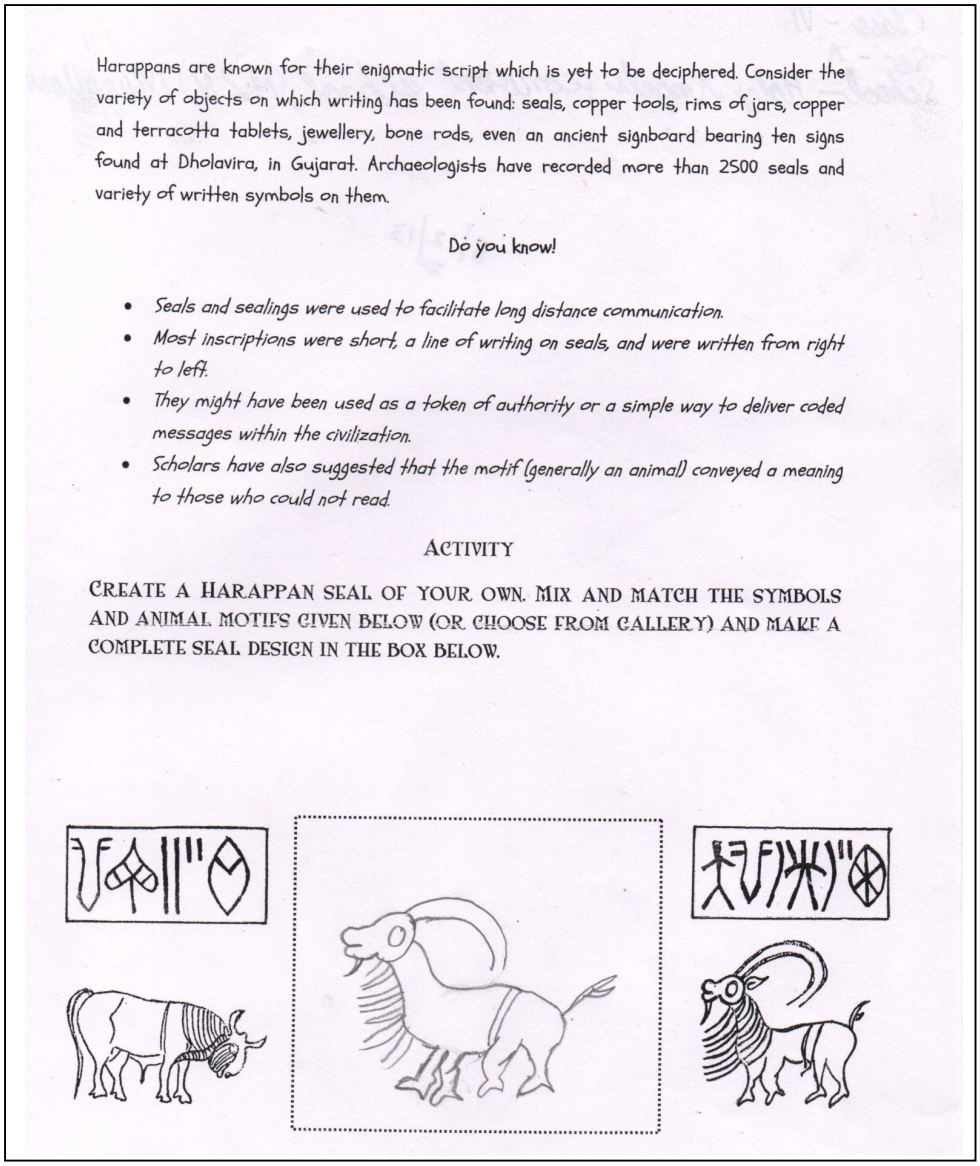

The Indus civilization is known for the production of various types of earthen vessels and their decoration by painting or incised designs.
ACTIVITY
CHOOSE ANY VESSEL/POT SHAPE. DRAW BELOW A HARAPPAN POT OF YOUR OWN IN THE BOX BELOW. DECORATE WITH DESIGNS IN IT.
PAINTED GREY WARE
ARCHAEOLOGISTS WHO STUDY ARTIFACTS BROADLY CLASSIFY THEM AS UTILITARIAN AND LUXURIES. TECHNOLOGY AND CRAFT BECAME ESSENTIAL MECHANISMS FOR CREATING UNIQUE OBJECTS.

Fig.3.4.11 Completed worksheet on pottery

Pottery has its utilitarian aspect that is reflected in its shape. Harappans made pots and vessels of diverse shapes and sizes that indicated towards the surplus of food production and their storage, cooking or ritualistic patterns. The worksheet (Fig. 3.4.11) was targeted to make children think of possible shapes and their uses that was revealed by artefacts recovered.



Harappans are known for their enigmatic script which is yet to be deciphered. Consider the variety of objects on which writing has been found: seals, copper tools, rims of jars, copper and terracotta tablets, jewellery, bone rods, even an ancient signboard bearing ten signs found at Dholavira, in Gujarat. Archaeologists have recorded more than 2500 seals and variety of written symbols on them.

Do you know!

- *Seals and sealings were used to facilitate long distance communication.*
- *Most inscriptions were short, a line of writing on seals, and were written from right to left.*
- *They might have been used as a token of authority or a simple way to deliver coded messages within the civilization.*
- *Scholars have also suggested that the motif (generally an animal) conveyed a meaning to those who could not read.*

ACTIVITY

CREATE A HARAPPAN SEAL OF YOUR OWN. MIX AND MATCH THE SYMBOLS AND ANIMAL MOTIFS GIVEN BELOW (OR CHOOSE FROM GALLERY) AND MAKE A COMPLETE SEAL DESIGN IN THE BOX BELOW.

Fig.3.4.12 Completed worksheet on Harappan seals

Harappan seals are the earliest evidence of possible coded language that came to light about the ancient Civilization. Seals are undeciphered but enigmatic and most significant artefact to explore the writing, trade or art of ancient society. Fig. 3.4.12 describes seals as significant indicator of different social aspects that were to be learnt and finally expressed by children as per their understanding.

The Indian invention of ***Zero*** has revolutionized the very practice of arithmetic the world over. India gave to the world an ingenious method of expressing all numbers by means of symbols, each symbol representing a value of position as well as an absolute value.

Going ahead there are information panels on ancient arithmetic, measures of length, weight and time. Observe them to know some interesting ideas.

Activity: You will be able to see a display panel on *Word Numerals*. Write correct words in the table below that is similar to the display panel in front of you.

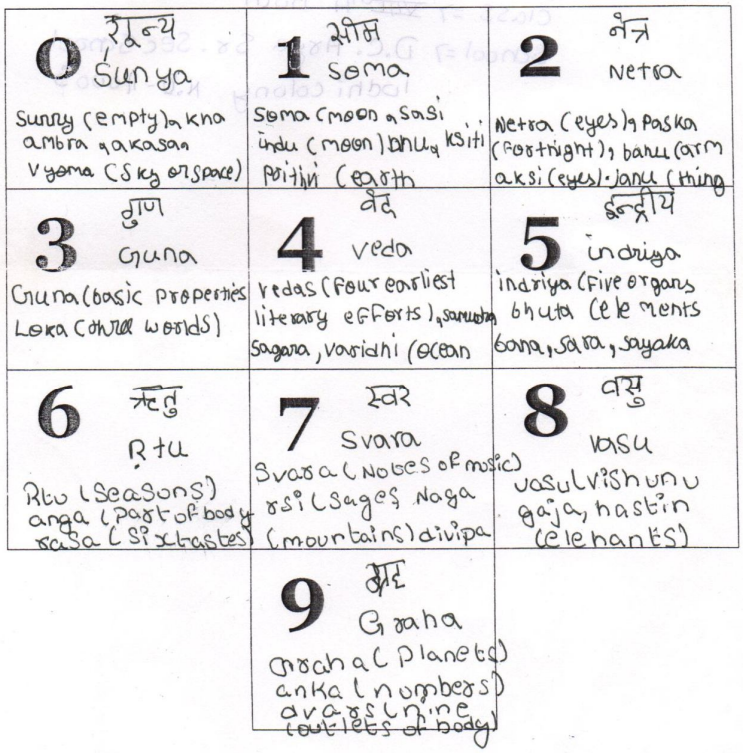
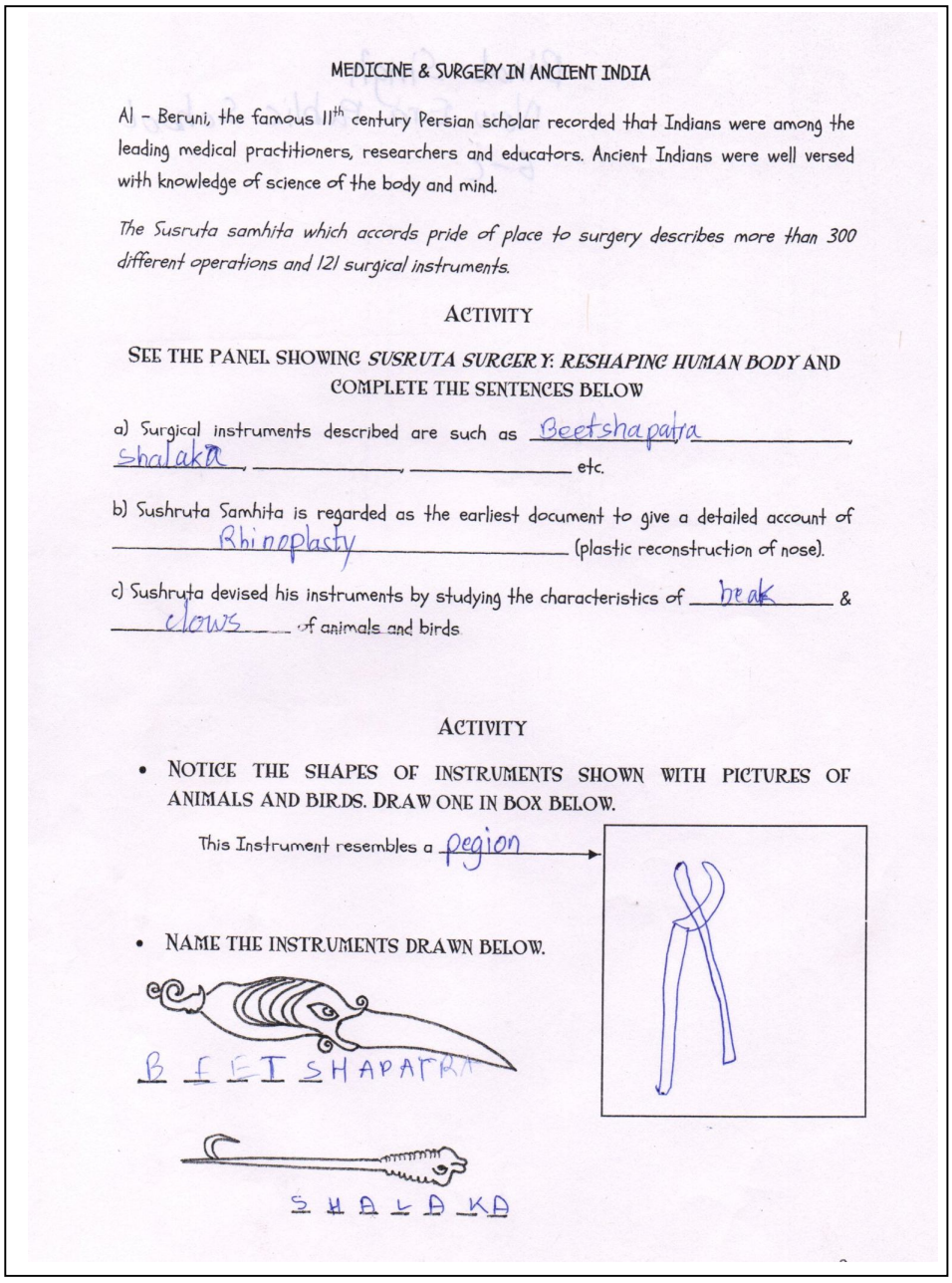

0 शून्य Sunya
Sunya (empty) akasa ambara gaganam vyoma (sky or space)
1 सोम Soma
Soma (moon) sasi indu (moon) bhu, ksiti prithvi (earth)
2 नेत्र Netra
Netra (eyes) paksa (forthright) bahu (arm aksi (eyes) vastu (thing
3 गुण Guna
Guna (basic properties Loka (three worlds)
4 वेद Veda
Vedas (four earliest literary efforts) samudra sagara, varidhi (ocean
5 इन्द्रिय Indriya
indriya (five organs bhuta (elements bana, sara, sayaka
6 ऋतु Rtu
Rtu (seasons) anga (part of body rasa (six tastes)
7 स्वर Svara
Svara (Notes of music) rsi (Sages) Naga (mountains) dvipa
8 वसु Vasu
vasu Vishnu gaja, hastin (elephants)
9 ग्रह Graha
Graha (planets) anka (numbers) avayava (outlets of body)

Fig.3.4.13 Completed worksheet on numbers

The ancient arithmetic of numerals, measurement and time are evidences of genius Indians who contributed this knowledge in scientific intellect worldwide. Planets are often associated with system of numbers in Indian context and worksheet (Fig. 3.4.13) that emphasised on the significance of this knowledge was part of activity booklet. The respondent extensively observed all the details and wrote in the worksheet that shows the information was digestible and it was easy to correlate with the display.



MEDICINE & SURGERY IN ANCIENT INDIA

Al – Beruni, the famous 11th century Persian scholar recorded that Indians were among the leading medical practitioners, researchers and educators. Ancient Indians were well versed with knowledge of science of the body and mind.

The Susruta samhita which accords pride of place to surgery describes more than 300 different operations and 121 surgical instruments.

ACTIVITY

SEE THE PANEL SHOWING *SUSRUTA SURGERY: RESHAPING HUMAN BODY* AND COMPLETE THE SENTENCES BELOW

a) Surgical instruments described are such as Beetshapatra, Shalaka, _____, _____ etc.

b) Sushruta Samhita is regarded as the earliest document to give a detailed account of Rhinoplasty (plastic reconstruction of nose).

c) Sushruta devised his instruments by studying the characteristics of beak & claws of animals and birds.

ACTIVITY

- NOTICE THE SHAPES OF INSTRUMENTS SHOWN WITH PICTURES OF ANIMALS AND BIRDS. DRAW ONE IN BOX BELOW.

This Instrument resembles a pegion →

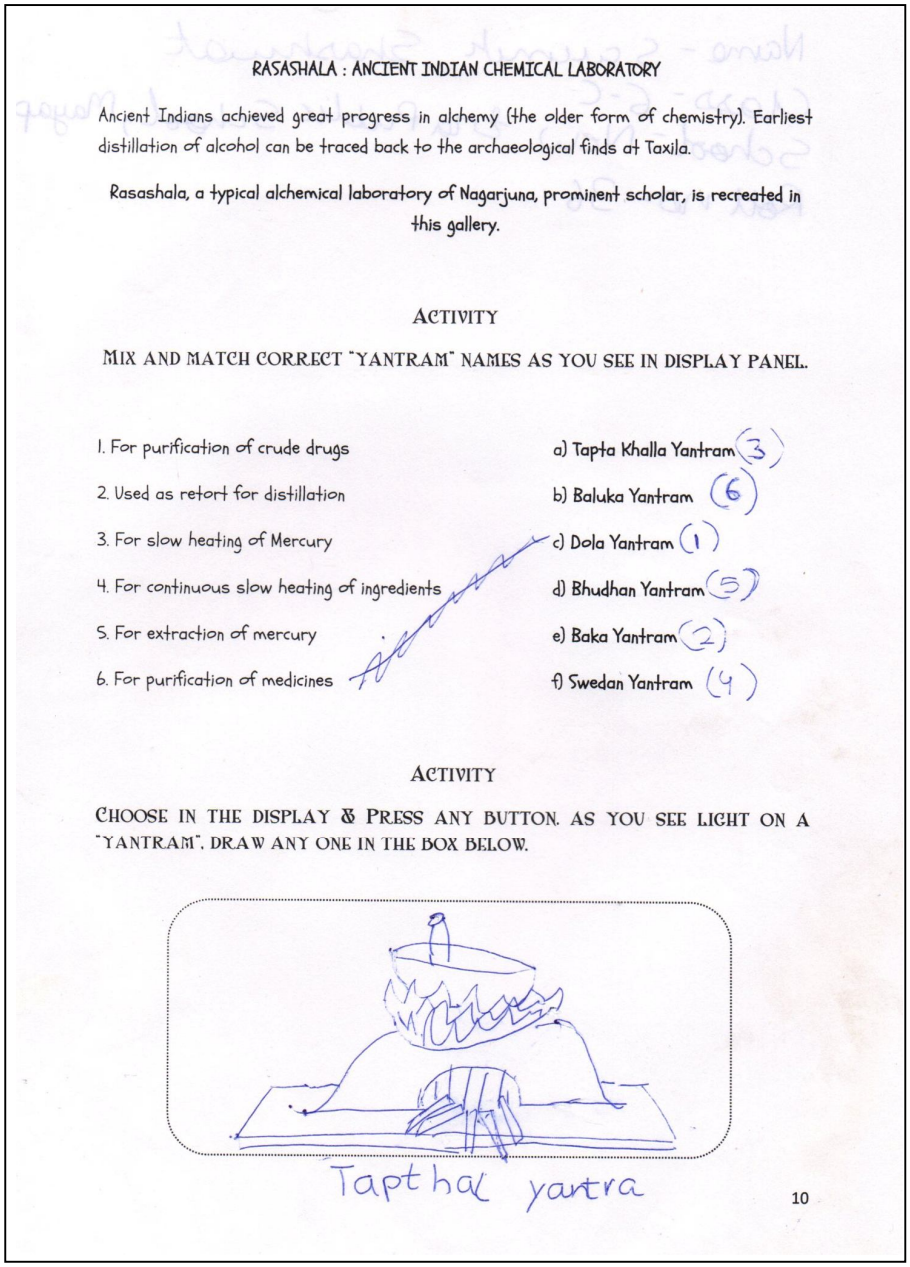
- NAME THE INSTRUMENTS DRAWN BELOW.

BEETSHAPATRA

SHALAKA

Fig.3.4.14 Completed worksheet on ancient medicine and surgery

There was a panel showing replicas of ancient surgery tools along with a diorama showing a surgery being done. This was recorded in worksheet (Fig.3.4.14) as a point of reference to create a sense of pride in this indigenous aspect of advance Indian medicine and surgical practices. The respondent expressed this understanding in form of answers and sketch.



RASASHALA : ANCIENT INDIAN CHEMICAL LABORATORY

Ancient Indians achieved great progress in alchemy (the older form of chemistry). Earliest distillation of alcohol can be traced back to the archaeological finds at Taxila.

Rasashala, a typical alchemical laboratory of Nagarjuna, prominent scholar, is recreated in this gallery.

ACTIVITY

MIX AND MATCH CORRECT "YANTRAM" NAMES AS YOU SEE IN DISPLAY PANEL.

1. For purification of crude drugs	a) Tapta Khalla Yantram (3)
2. Used as retort for distillation	b) Baluka Yantram (6)
3. For slow heating of Mercury	c) Dola Yantram (1)
4. For continuous slow heating of ingredients	d) Bhudhan Yantram (5)
5. For extraction of mercury	e) Baka Yantram (2)
6. For purification of medicines	f) Swedan Yantram (4)

ACTIVITY

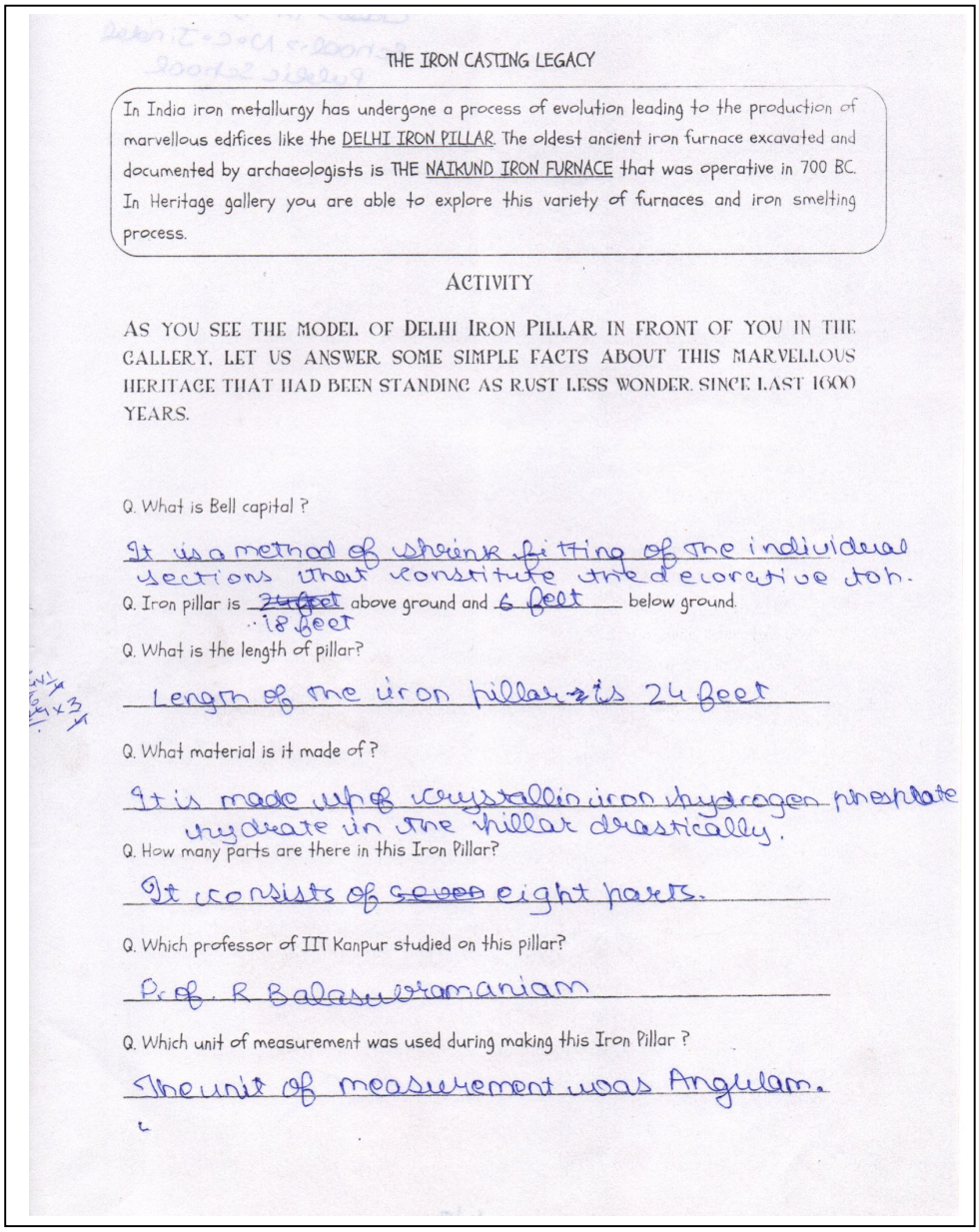
CHOOSE IN THE DISPLAY & PRESS ANY BUTTON. AS YOU SEE LIGHT ON A "YANTRAM", DRAW ANY ONE IN THE BOX BELOW.

Tapthal yantra

10

Fig.3.4.15 Completed worksheet on ancient chemical laboratory

The ancient science of chemical laboratories was popular among Indians and evidences were found in archaeological site of Taxila. The selected panel was reflecting this information. To make the respondent understand archaeological findings in relation to science, worksheet (Fig.3.4.15) was designed. The response shows analysing of information from display.



THE IRON CASTING LEGACY

In India iron metallurgy has undergone a process of evolution leading to the production of marvellous edifices like the DELHI IRON PILLAR. The oldest ancient iron furnace excavated and documented by archaeologists is THE NAIKUND IRON FURNACE that was operative in 700 BC. In Heritage gallery you are able to explore this variety of furnaces and iron smelting process.

ACTIVITY

AS YOU SEE THE MODEL OF DELHI IRON PILLAR IN FRONT OF YOU IN THE GALLERY, LET US ANSWER SOME SIMPLE FACTS ABOUT THIS MARVELLOUS HERITAGE THAT HAD BEEN STANDING AS RUST LESS WONDER SINCE LAST 1600 YEARS.

Q. What is Bell capital ?

It is a method of shrink fitting of the individual sections that constitute the decorative top.

Q. Iron pillar is ~~24 feet~~ 18 feet above ground and 6 feet below ground.

Q. What is the length of pillar?

Length of the iron pillar is 24 feet

Q. What material is it made of ?

It is made up of crystallin iron hydrogen phosphate hydrate in the pillar drastically.

Q. How many parts are there in this Iron Pillar?

It consists of ~~seven~~ eight parts.

Q. Which professor of IIT Kanpur studied on this pillar?

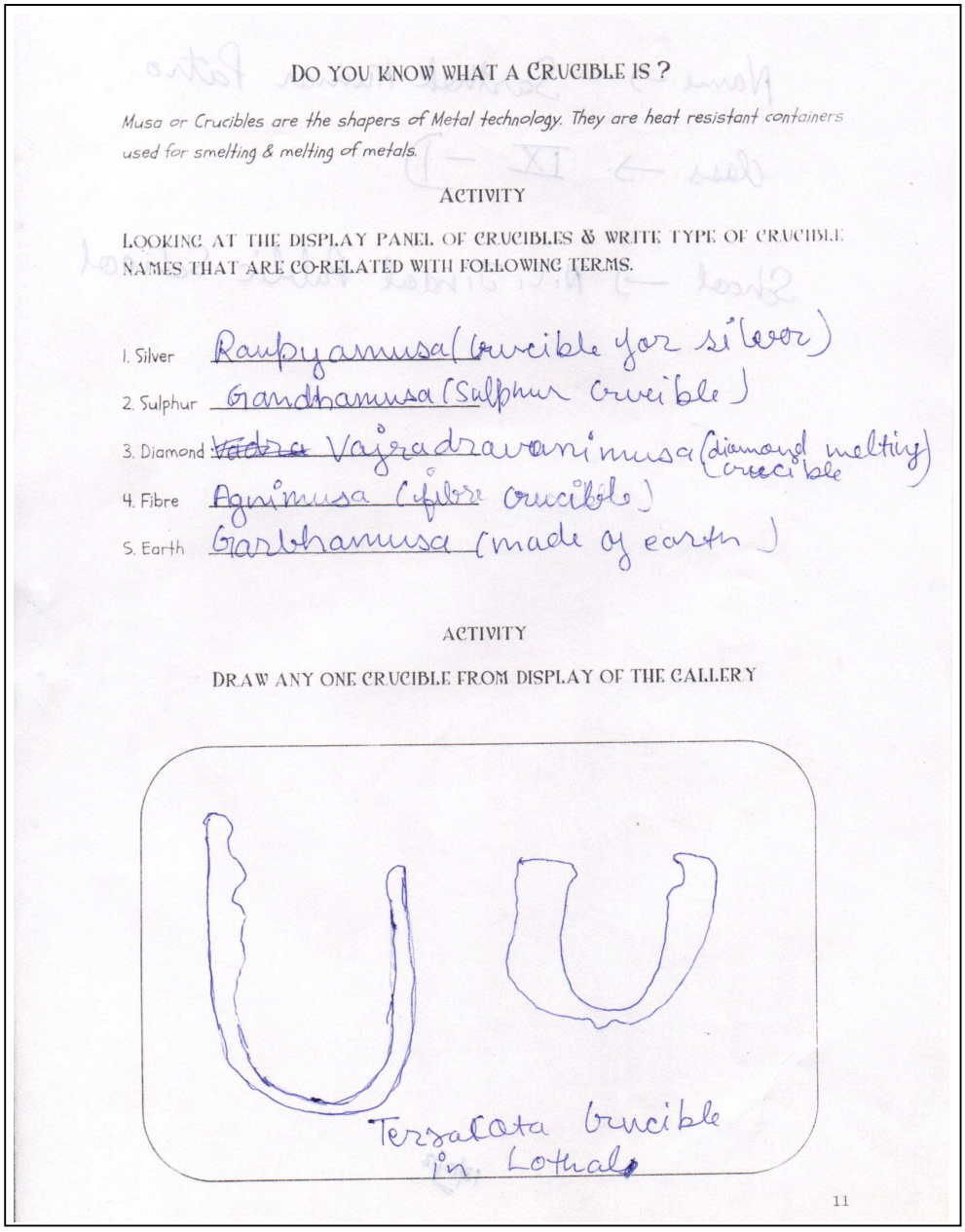
Prof. R Balasubramaniam

Q. Which unit of measurement was used during making this Iron Pillar ?

The unit of measurement was Angulam.

Fig.3.4.16 Completed worksheet on iron casting

Delhi Iron Pillar at Mehrauli archaeological site was a key highlight of the selected display for designing the (Fig.3.4.16) worksheet here. The respondent observed and processed the information in proper columns that shows the panel was relatable. The actual calculation is also visible by the respondent that reflects immersive experience in the display.



DO YOU KNOW WHAT A CRUCIBLE IS ?

Musa or Crucibles are the shapers of Metal technology. They are heat resistant containers used for smelting & melting of metals.

ACTIVITY

LOOKING AT THE DISPLAY PANEL OF CRUCIBLES & WRITE TYPE OF CRUCIBLE NAMES THAT ARE CO-RELATED WITH FOLLOWING TERMS.

1. Silver Raupyamusa (crucible for silver)
2. Sulphur Gandhamusa (Sulphur crucible)
3. Diamond ~~Vadra~~ Vajradravanimusa (diamond melting crucible)
4. Fibre Agnimusa (fibre crucible)
5. Earth Gardhamusa (made of earth)

ACTIVITY

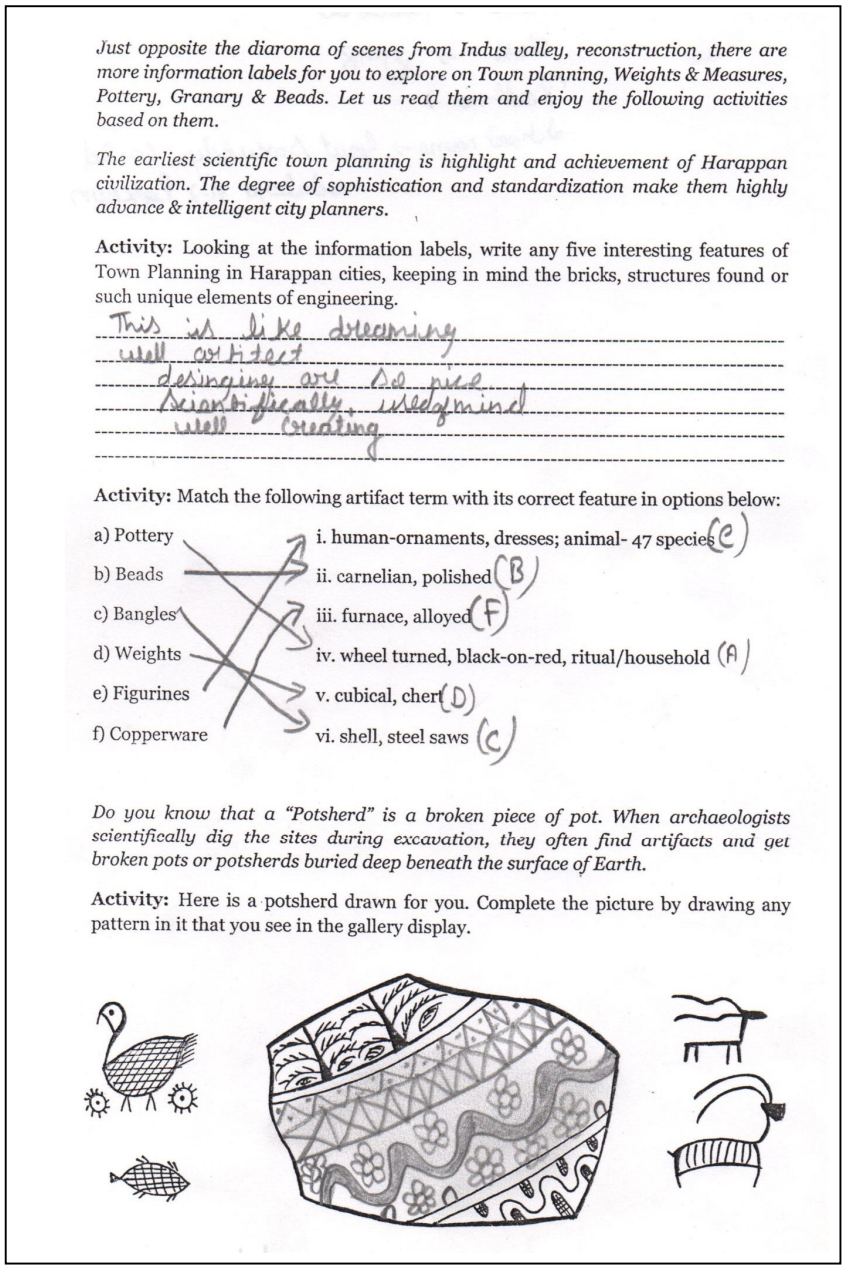
DRAW ANY ONE CRUCIBLE FROM DISPLAY OF THE GALLERY

Terracota crucible in Lothal

11

Fig.3.4.17 Completed worksheet on crucibles

Crucibles are ancient technological tools used in metal melting processes. The respondent (Fig. 3.4.17) here chose a significant archaeological finding at Lothal and drew as per observation. The drawing was not much descriptive but the text gave the indication that information was understood and learnt.



Just opposite the diaroma of scenes from Indus valley, reconstruction, there are more information labels for you to explore on Town planning, Weights & Measures, Pottery, Granary & Beads. Let us read them and enjoy the following activities based on them.

The earliest scientific town planning is highlight and achievement of Harappan civilization. The degree of sophistication and standardization make them highly advance & intelligent city planners.

Activity: Looking at the information labels, write any five interesting features of Town Planning in Harappan cities, keeping in mind the bricks, structures found or such unique elements of engineering.

This is like dreaming well architect designing are so nice scientifically, wide mind well creating

Activity: Match the following artifact term with its correct feature in options below:

a) Pottery	i. human-ornaments, dresses; animal- 47 species (E)
b) Beads	ii. carnelian, polished (B)
c) Bangles	iii. furnace, alloyed (F)
d) Weights	iv. wheel turned, black-on-red, ritual/household (A)
e) Figurines	v. cubical, chert (D)
f) Copperware	vi. shell, steel saws (C)

Do you know that a "Potsherd" is a broken piece of pot. When archaeologists scientifically dig the sites during excavation, they often find artifacts and get broken pots or potsherds buried deep beneath the surface of Earth.

Activity: Here is a potsherd drawn for you. Complete the picture by drawing any pattern in it that you see in the gallery display.

Fig.3.4.18 Completed worksheet on Harappan towns and artefacts

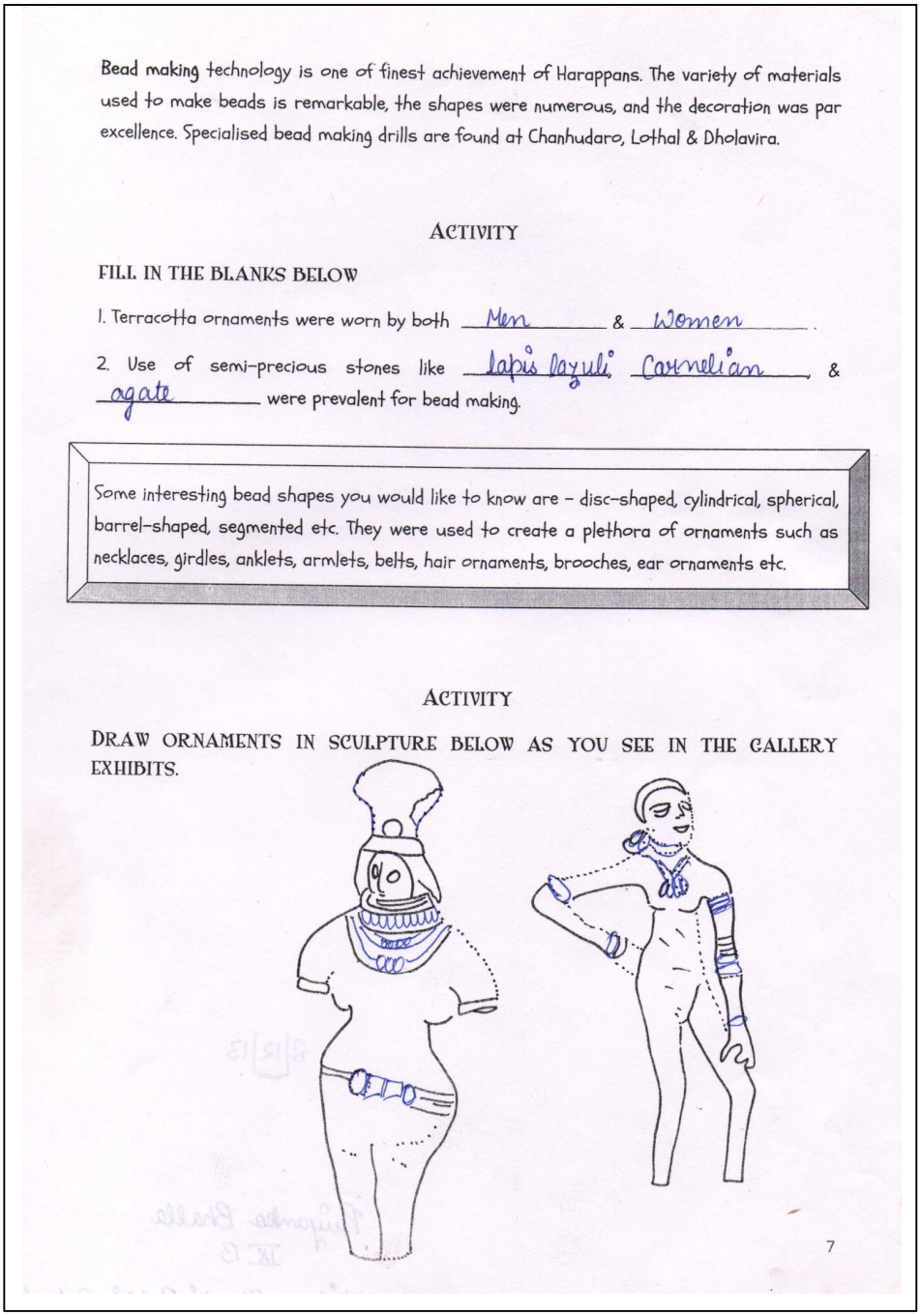
Fig. 3.4.18 shows a worksheet with 3 activities (subparts) to be completed by the respondent. The first part was related to exploring the features of town planning of Harappan cities. The respondent tried to answer the question but was not able to derive the key elements requested. This might indicate that panel with exhaustive information may confuse a child rather than giving simple facts before they go back.

The second part of the worksheet was a match the columns activity based on Harappan crafts and material used. The perfect matching of answers indicate that respondent understood which craft was being discussed and the key information related to that aspect was selected as appropriate response. In this simple activity, the respondent actually read the label and chose best suited information to the corresponding columns. It indicated the label (text) processing skills of children to derive information and learn from them.

The third part of worksheet was description of potsherds and its purpose and significance as an archaeological finding. The respondent created a pattern showing the creativity skills and the urge to express a design or information different from what was shown in panel. This act shows that respondent enjoyed creating an individual piece of art while learning in the gallery. This was a light mood activity and respondent took equal enjoyment in doing so.

Drawing from 3D object and expressing on paper hints towards the noted information that was observed by the child. The exact information was penned down, and facts were prioritized before imagination.

The worksheet based on describing salient features of jewellery (Fig. 3.4.19) of Harappans, was designed to make children imagine how people were conscious in dressing and adorning, even in the past. They had a refine taste of clothing and ornamentation. The respondent chose to complete the sketch but there were some children who actually made extra strands of necklaces or jewellery to give it a personal touch of imagination.



Bead making technology is one of finest achievement of Harappans. The variety of materials used to make beads is remarkable, the shapes were numerous, and the decoration was par excellence. Specialised bead making drills are found at Chanhudaro, Lothal & Dholavira.

ACTIVITY

FILL IN THE BLANKS BELOW

1. Terracotta ornaments were worn by both Men & Women.

2. Use of semi-precious stones like lapis lazuli, Carnelian, & agate were prevalent for bead making.

Some interesting bead shapes you would like to know are – disc-shaped, cylindrical, spherical, barrel-shaped, segmented etc. They were used to create a plethora of ornaments such as necklaces, girdles, anklets, armlets, belts, hair ornaments, brooches, ear ornaments etc.

ACTIVITY

DRAW ORNAMENTS IN SCULPTURE BELOW AS YOU SEE IN THE GALLERY EXHIBITS.

7

Fig.3.4.19 Worksheet on Harappan jewellery

The activities conducted by the researcher such as gallery talk, tour and worksheets based on this gallery, it can be said that people appreciate the rich heritage through the content of exhibits, in this gallery. Some of the completed worksheets quoted here reflect how children observed the exhibits and derived the information. In this purpose they read through the labels, saw the displays and discovered the information through various sources available in the

exhibition. Thus in process of completing a task, children actually learnt few archaeological aspects through the object oriented dissemination activity.

The worksheet provided an advantage to children who came for a visit in gallery. They actually participated in a knowledge generation and sharing process. The respondents or children who interacted would share this extra piece of information with fellow friends which might have remained unnoticed otherwise. Simply visiting a gallery can only give an experience of being in a museum space but the visit was qualitative enough for generating any outcomes have to be recorded in some form or the other. To derive at learning outcomes and relatable inferences, worksheets added that touch to their normal visit and in this process the display panels were also analysed.

Apart from the Heritage gallery display, a worksheet (Fig. 3.4.20) was developed by the researcher for one of the most significant ancient water monument namely Stepwells. As the Science centre don't have display related to Stepwells, a separate page on ancient water management technology was developed in this booklet, in order to introduce visitors with the same. India has a glorious history of ancient water monuments that were unique in purpose and architecture. There were baolis, vavs, ponds, artificial lakes, pools, sluices, tanks, wells etc. The term 'stepwell' itself indicates the basic features of architecture and function of this peculiar kind of well-monument. Both the parts of the term, i.e., 'step' and 'well', characterize its inherent features.

STEPWELLS – Ancient Water Management Technology in India

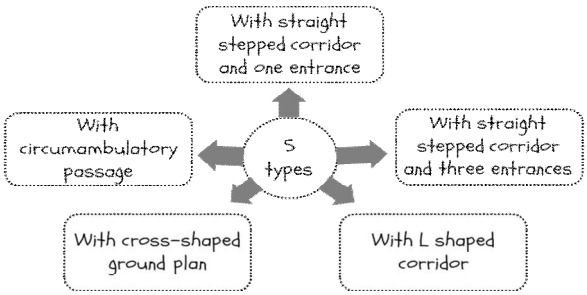
India has a glorious history of ancient water monuments that were unique in purpose and architecture. There were baolis, vavs, ponds, artificial lakes, pools, sluices, tanks, wells etc. The main criteria were to harness water and get recharge from various sources of water and make it available for rest of the year.

One of a unique kind of water monument was a Stepwell. The term 'stepwell' itself indicates the basic features of architecture and function of this peculiar kind of well-monument. Both the parts of the term, i.e., 'step' and 'well', characterize its inherent features. A stepwell is but one type of the various existing kinds of well-monuments in India. A more correct term could be a 'staircase-well' or 'stepped well'.

The location of a stepwell is basically at three different places:

1. Connected to a temple or housing a temple or shrine inside.
2. Within or at the edge of a village.
3. At the sides of overland-roads of completely outside villages or settlements.

The main function of a stepwell is to supply water, mostly deriving their water from underground springs. As the water was not exposed to heat and sun, it was free from contamination and had constant flow of freshwater filtered through the earth.


With straight stepped corridor and one entrance
With circumambulatory passage
5 types
With straight stepped corridor and three entrances
With cross-shaped ground plan
With L shaped corridor

Some magnificent Stepwells you can also see in the heart of the city, Delhi which date back to 13th century…

- Gandhak Ki Baoli at Mehrauli - It takes its name from the smell of gandh (sulphur), which allegedly emanates from its water. It has 5 storeys underground & a circular well.
- Agrasen Ki Baoli on Hailey road, Connaught Place – It is finest in Delhi, a complex structure in 4 levels and with more than 100 steps.
- Baoli of Nizamuddin – One of the most important stepwells in Delhi.
- Rajon Ki Baoli at Mehrauli – It is an extraordinary monument has 66 steps lead down to the basin in the fourth level underground.

(Book Source: The Stepwells of Gujarat by Jutta Jain Neubauer (1981) Abhinav Publications, New Delhi)

Fig. 3.4.20 Worksheet on stepwells

Details about location and function of stepwell, along with its salient features were mentioned for information of the visitors. Some examples of magnificent

Stepwells one can see in the heart of the city, Delhi such as Gandhak Ki Baoli at Mehrauli, were also added as a point to make them explore the real monument *insitu*.

Information Revolution gallery on the first floor at Science Centre has display of archaeological heritage. It has a display on Pre-historic site of Bhimbhetka (Fig. 3.4.21), Harappan seals and Ashokan inscriptions. It somewhat connects the information provided in Heritage Gallery. During the research study, this gallery was also noted as an area of educational source.

Fig.3.4.21 Prehistoric cave painting in Diorama

This gallery portrays the story of evolution of Communication technology over past 6000 years in India. This is a unique display which initiates from the cave paintings and goes till the age of Internet. The diorama depicting Bhimbetka site gives a feel of actually visiting a cave site. This was the earliest form of pictorial language that was created on caves to communicate life and stories. Then was proto historic record in form of motifs on seals and pottery that indicated a sign language among people. During historic period, the inscriptions on stone, metal or palm leaf etc. were the next step in the evolution of communication processes, and these are still in practice in

different forms. Connecting communication to archaeology can be understood through these displays and patterns of teaching and learning in ancient times can be seen through them.

Archaeologists use material remains to interpret past human activities, and the above displays in the National Science Centre act as effective instruments for interpretation for communicating didactic experiences to young learners. At the same time it serve the educational purpose and informative for various age groups of common public about heritage, culture and archaeology. Museum exhibitions themselves are designed to offer degrees of involvement (Kotler et al. 2008). This out of book experience has its own benefits as it relates to the missing links that are lacking in curriculum. The plethora of interactive, immersive exhibitions and programs, the tours outside the museum and the virtual reality of the Internet have created something quite beyond the scope of the traditional museum (Kotler et al. 2008). The 2D images in book sometimes mislead the students about the actual artefact, but seeing a replica, of almost same feature and size, or seeing a diorama with appropriate representation, fill the information gap. National Science centre through its arduous effort, has recreated all those connections to provide a glimpse of human past at its best.

Regional Level Case Studies

3.5 CASE STUDY 4

TOUR AT ARCHAEOLOGICAL SITE & MUSEUM: DHOLAVIRA

Researcher acted as a resource person and took Heritage tour for school children of Delhi Public School, Surat (Gavier), of class VI onwards at – (a) Lothal & Adalaj Stepwell, Ahmedabad (2^{nd} to 7^{th} February 2014) and (b) Dholavira, Kachchh (24^{th} November 2014- i.e 23 to 27 November 2014). The museums at archaeological sites of Lothal & Dholavira are adjacent to the partly reconstructed and preserved sites.

The heritage tour was organised by a private organisation who consulted the researcher in advance to plan and design an effective and meaningful heritage

learning experience to students. The activities were planned in such a way to visit Lothal and Dholavira, interpretation of the site so as to make students understand the significance of these civilization sites and the role of archaeology in revealing and maintaining the same.

Visit to Dholavira site & museum

The tour to Lothal & Adalaj Stepwell was a starter to engage children with the feel of visiting an archaeological heritage site and explore the environment they are situated in and their socio-cultural perspectives. After the site tours to Lothal, researcher accompanied another group of children to Dholavira where the tour begun with site visit of Dholavira, and an interaction (Fig. 3.5.1) was later done inside the museum premises.

During the site visit the expanse of site was taught to children briefing about the major divisions of city i.e. Citadel (Castle & Bailey), Middle town and Lower town and the two water channels, Mansar (in north) and Manhar (in south). Walking around the structures the first one to notice was the ancient rock cut reservoir and the children were told about the ancient water management systems and the town planning of city. The ancient ruins of Dholavira had terracotta pipes channels, underground wells and other water storage structures that were shown to the group. They were shown the stadium and other places of craft manufacturing units. The difference between the size and structure of houses in divisions of city was also discussed during the site visit.

Fig.3.5.1 Researcher orienting participants

Coming to the museum later, the students were briefed about what they can observe inside the museum and connect the past with present. Children were shown objects/artefacts in Dholavira museum, and made an effort to connect them with functional perspective of the present day objects. The activity initiated inside the museum, where children observed (Fig.3.5.2), explored and brainstormed. Visiting to an actual archaeological site, gives a strong sense of understanding about the vastness and feel of site that cannot be visualized in books or photographs. Walking on and around the structures and parts of the archaeological site, was a completely novel experience to children which will be cherished throughout their lives.

While exploring an archaeological site, children do have to use their imagination and wisdom in order to relate the site with the cultures of past which have not survived now. Children prefer participatory experiences over the taught courses, and hence an initiative to introduce them to actual archaeological site was planned and organized to connect them with the discipline of archaeology. The artefacts housed in the museum and making sense of the objects with the context of the site will happen only on the site, which makes the site visits, very important part of learning exercise.

Fig.3.5.2 Children observing the display, Dholavira Site museum

Fig. 3.5.3 shows the creative outputs of children after observing the display at Dholavira museum. Children created images of artefacts and connected their significance or probable uses keeping in mind the similar objects seen in present. The connections of past with present was reflected in this activity.

Fig.3.5.3 Outcome of the activity

Museum educators examine the impact of museums on information processing, knowledge acquisition, and, ultimately, the role of informal learning in education ((Kotler et al. 2008). Actual visit to archaeological site enhances the degree of involvement with knowledge of material culture and lifestyle of the habitants of bygone era. Thus this tour was planned by school authorities in order to sensitize children towards archaeological heritage and in this process researcher acted as a mediator to disseminate information that may accomplish the mission of creating connecting links and learn lessons of past civilizations. The artefacts that originally were part of site then later shifted in the museum can only be understood through such cumulative learning activity and tour.

Connecting and learning with original artefacts was altogether a different experience where inquiry based learning inspired curiosity among children, they made sense out of the museum display. Creating this thought provided a promising output in the form of images/drawings generated by children at the end of day. Activity continued till evening as children wished to add more ideas they could gather within the stipulated time. The drawings that reflected thoughts and observations of children about linkages of past and present were a successful endeavour. Going beyond the introduction of objects or sites, the context of the collection was learnt by the participants.

3.6 CASE STUDY 5

CLAY WORKSHOP AT MUSEUM OF ARCHAEOLOGY, DEPARTMENT OF ARCHAEOLOGY AND ANCIENT HISTORY, THE MAHARAJA SAYAJIRAO UNIVERSITY OF BARODA, VADODARA, GUJARAT.

It was an existing practice that, the museum at department provided educational services to schools frequently. School children were allowed for planned visits and observe galleries, artefacts and documentaries as per education and learning requirements.

To connect children with collection housed in department and the significance of archaeology as a subject, a clay workshop was organized for the class 9th students of Experimental School, Vadodara under the guidance of Prof. Ambika Bipin Patel, (PhD supervisor).
This workshop was an effort to make children understand varieties of terracotta found from diverse sites of Indus Valley civilization located in Gujarat and how baked clay (terracotta) played a major role as a raw material in making toys. The purpose of conducting the workshop (22nd September 2012) was to make children motivated to explore about terracotta materials in museum collections associated with Harappan civilization.

Art is an excellent medium to make learning fun. The cognitive ability to understand a concept gets enhanced when a person does some hands on activities. Clay is a good medium of art to make children understand the three dimensional shape and process behind creating a 3D model. The third objective of the workshop was to make social science subject more interesting for school children, through clay art so as to cover the theme of Indus Terracotta which is connected to the curriculum. This was also aimed to motivate children to visit more museums, and search digital sources related to the same theme in order to know beyond the textbooks.

As observed from Gujarat board text books, the idea of clay toy Harappan artefacts, have not described in detail. Only very few images furnish the information. According to their school syllabus it was observed that the Gujarat board textbook content was not elaborate. In NCERT book, good photographs and pictures, maps as well as line sketches have been kept in chapters related to Harappa, to make the student acquainted with the significant aspects and understand them well. Due to these reasons school children often miss the idea or thought process of the unique aspects or material findings of an archaeological site or a civilization. Museums are flexible in contrast to schools. They provide questions, and not all the answers. The students, who were selected for the activity, had already learnt about this civilization in their textbook in the previous classes.

Arrangements for activity involved preparation of sketches, some models of actual figurines, material required for clay moulding, and the department-school co-ordination. Illustrations were prepared by researcher, and original Terracotta object from the museum collection were selected for the orientation, discussion and viewing. The schedule of the workshop was pre-decided with the school based on the convenient days available to them. Two of the school teachers, one of social science and other of Art, were arranged by the school to co-ordinate during the workshop.

The day workshop was to be conducted, all the required material such as workable clay, water containers, clay tools, samples of some figurines and handmade sketches of figurines, and slide projector were set up in the art room in the school. To orient children with the theme of workshop and the terracotta art of Indus civilization, Prof. Ambika Patel provided slide show in the art room of the school on terracotta of Indus civilization.

After the orientation and briefing the concept, students were allowed to view the original terracotta materials displayed for them. Thereafter the children were verbally given instructions to make any object as per their choice.

Children were innovative in using their imagination in giving new shapes and designs to the objects they were making out of clay. Many of them created different variety of animals (like elephant, camel, deer), human figurines, masks, cart frames (with and without rider), ornaments like beads, necklaces, bangles etc. Through participatory observation it was noticed that clay moulding process and designing done by children included methods like pinching, incising, appliqué (for eyes, nose etc.), that too very efficiently. It seemed as if children were enjoying the activity and were encouraged to apply new ideas in their artwork. This activity though was a fun filled process for children, but made a positive impact on understanding the concept of Indus terracotta. The children were actually applying their ability & thoughts to create an artefact or figurine (Fig. 3.6.1a, b, c, d) which was an idea of their ancestors at some point of time.

Fig.3.6.1a A girl making a bangle similar to Harappan TC bangle

Fig.3.6.1b A human figurine adorned with ornaments made by a student

Fig.3.6.1c. Recreated mother goddess

Fig.3.6.1d. Harappan cart (with rider) recreated by student

During the activity final year BA students, from the department, provided help. Moreover the school teachers also monitored the activity. After the scheduled time period was over, children were given instructions to wash their hands and settling down back at their places. Meanwhile this gap was utilized

to pick final molded objects in the tray. After a short break the children were asked to express their views as feedback about this activity. Children were excited, happy and felt that more such workshops must be conducted to make learning easy and interactive. Many of them were busy moulding with the left over clay and were discussing about the objects made by fellow classmates.

The school principal expressed gratitude towards the effort made by the team of Museum of Archaeology. After the workshop, the final moulded artefacts (Fig. 3.6.2) were brought back to the department and were displayed in a showcase within the department for students and visitors to see the outcome of the activity.

Fig.3.6.2 Display of recreated objects.

We could infer that the workshop was successful based on the outcome of products created by children and their feedback expression for the activity of doing and learning. The variety of objects created by school students with such fine details and enthusiasm was appreciated by both museum and the school. These kinds of activity enable school children to know the possibilities of knowledge and exploration opportunities lay beyond the classroom. This helps in clarity of concept and wider scope of understanding and learning a subject.

It also provides insight for innovative means of teaching for the school to explore and use. The visual aids and imagination of children created wonderful pieces of moulded clay figurines that resembled many TC artefacts of Indus Valley terracotta toys. Toys are not only an index to human activity but reflect the strong undercurrents in the structure of society (Dongerkery 1954). Thus the purpose of conducting the workshop proved to be fruitful and creative endeavour to supplement the textbook knowledge of school children. The purpose of engaging and stimulating imagination of children enliven new ideas and promote heritage understanding for generations to come.

3.7 CASE STUDY 6

SEAL MAKING ACTIVITY AT PUNJAB STATE WAR HEROES' MEMORIAL AND MUSEUM (PSWHMM), AMRITSAR, PUNJAB

PSWHMM, Amritsar is an important mile stone in annals of war heritage of India. It was inaugurated in October 2016, and is spread in an area of seven acres spanning 9 galleries, garden area, visitor amenities and open air display (Fig.3.7.1). Galleries on display cover themes of history, demography, culture of Punjab and nationally significant wars such as Kargil or Indo-Pak wars etc. The memorial is depicted by a steel sword rising 45 meters as it were to reach out for sky. Museum has a state-of-the-art 7D theatre which shows documentaries on heroism of India's soldiers.

Museum conducts regular tours and educational programs for children. As a part of one educational summer program, researcher conducted an activity on Seals' replica making at the museum. This was aimed to make children aware of the earliest people and their material culture. The images of artefacts of Harappa are visible in the wall display panels. The museum has a collection beginning from earliest civilization and history of India to connect with later Sikh heritage.

Fig.3.7.1. Exterior view of the PSWHMM, Amritsar

The activity was conducted in June 2017. The process of activity begun with a brief orientation about Harappan seals, their functions and use in the ancient times. This was followed by a short tour provided by the researcher to children to the first gallery of the museum. The children observed the Indus valley images and artefacts associated to site that reveal the Indus time. Children then gathered back for the activity and were provided sheets to draw (Fig. 3.7.2) designs of seals they wish to recreate in mouldable clay paste. Reference books with illustrations and sketches were shown to the children for ideas. Children chose motifs and selected the seal designs by drawing them on the sheets.

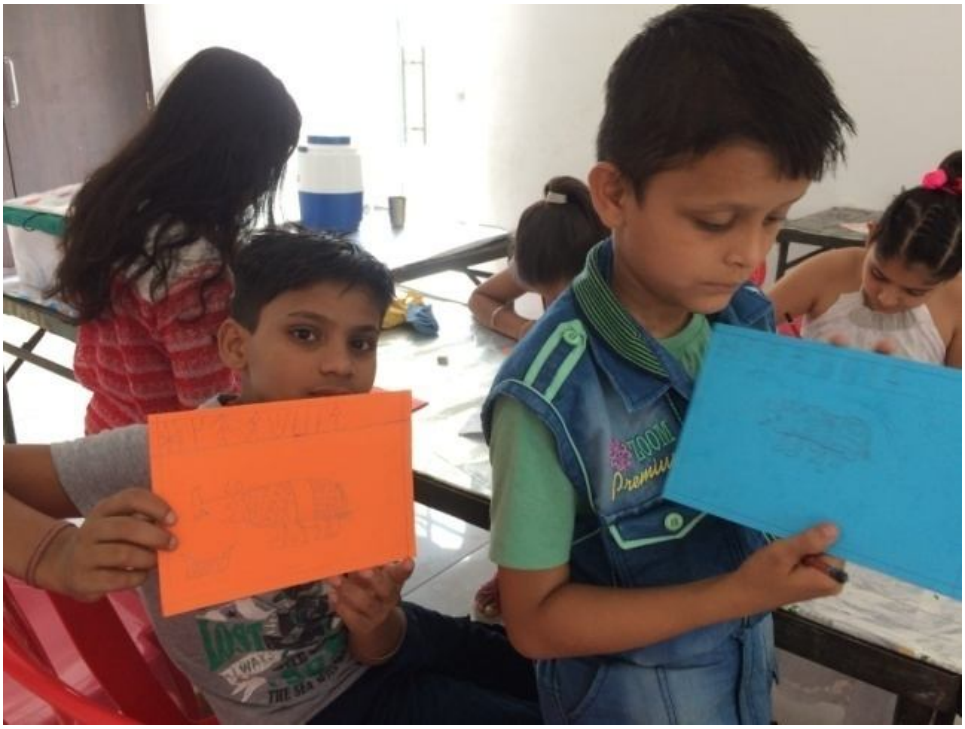


Fig.3.7.2 Drawings created by children

Fig.3.7.3 Researcher showing the process of creating mouldable clay

Fig.3.7.4 Sketch & replication of seal by participant

Clay dough mixture was prepared by mixing white clay with water and fevicol (Fig. 3.7.3) and instructions were given to initiate the making of seal by appliqué method of moulding (Fig. 3.7.4). Children initiated with appropriate base (square) to hold the motifs they were to place on the base. By using wooden tools, the seal designs were applied and at places carved delicately.

As the children belonged to different age groups, it was interesting to observe how each one express their ideas on paper and in clay (Fig. 3.7.5).

Fig.3.7.5 Different age group children making seal replicas during workshop

Fig.3.7.6 Seals created by children during the workshop

As children were very inquisitive about the seals, their making techniques and possibilities of survival, they wanted to know about the motifs and the signs (pictorial) that are seen on different seals. The researcher could provide the information related to Harappan steatite seals and their possible crafting

techniques. The hands on activity with brainstorming discussion of younger kids inculcated a sense of museum liking and made them attracted to the curios objects housed in the museum. The outcome (Fig. 3.7.6) was many replicas of beautiful seal designs that children carried back home as souvenir of memory and a learning outcome for future.

Seals, though a small artefact in size, proved as an excellent conversation starter as it is associated with social, economical, cultural aspects of Harappan civilization. Children had a chance to explore the archaeological knowledge through simple museum activity that they might not have done individually at their homes. Doing such an activity together shows the variety of ideas and thoughts that emerge as an outcome of learning and understanding process.

3.8 CASE STUDY 7

POSTER MAKING ACTIVITY CONDUCTED AT NAVLAKHI VAV, VADODARA

Heritage Trust, Vadodara is an active organisation that focuses on promotion of heritage through awareness and activity programs. It is a nongovernmental organisation works closely with school children all over Vadodara, and conducts activities like quizzes, story sessions, art and craft activities etc. in relation to heritage promotion.

A poster making activity focusing on the aspect of water conservation - connecting heritage structures such as the stepwells, was conducted as a part of program organized by Heritage Trust, Vadodara and INTACH. This event was held at Navlakhi Vav, Laxmi Vilas Palace, Vadodara (19^{th} to 21^{st} January 2012). Researcher was a part of the team as resource person, for the three day activity in which children used heritage structure as a point of reference to learn about past cultures. They replicated the thoughts and ideas on paper, clay and in form of poetry.

Through the process of creating awareness on water conservation strategies, the organisation chose an ancient water monument that was indispensible

heritage structure on trade routes or for religious and utilitarian aspects. The site chosen for activity was an indirect approach in helping to preserve and protect the heritage/ archaeological structure. Children were able to relate with the existence and significance of heritage structure created by their ancestors for generations to come.

To initiate the learning process, the group that comprised of secondary school children from different schools of Vadodara, were given a tour by the researcher inside the heritage structure, Navlakhi Vav (Stepwell). Visiting a stepwell was an exciting experience for these children as usually these structures go unnoticed until someone highlights them on trade routes, or nearby sites. Gujarat being a dominant trade route site has stepwells of various types spread across the state.

An orientation about the significant functional aspects of an ancient water management structure was given to participants in beginning of the activity. Children were enthusiastic to use motifs and ideas from the structure and its ornate patterns of architecture, for their informative poster making activity. Researcher (Fig. 54) was guiding and motivating participants throughout the activity and was observing how the children were executing the idea of Water conservation reflecting ancient strategies of ancestors. The heritage is significant learning tool that is to be respected and the hidden narratives are to be explored for future generations. The ideas presented by participants on paper (Fig. 3.8.1, 3.8.2) gave a clear idea of sensitization they had developed towards these ancient monuments and in coming years if they spot a similar structure they can disseminate this acquired knowledge to future generations. The snowball effect of creating heritage awareness and promotion is a must to protect heritage for posterity. Thus activity that is being conducted close to the structure makes the story behind the structure become more effective and lively. The visual learning enhances cognitive memory thus inculcating a long term benefit for promoting irreplaceable and valuable heritage.

Fig.3.8.1Interaction with participants

Fig.3.8.2 Poster making in process

Fig. 3.8.3 An interesting poster by participants

As visible in Fig. 3.8.3 the group of participants recreated a pillar motif seeing the Navlakhi Vav. They wrote about the significance of water management and storage. During the activity children showed interest about why a utilitarian monument is decorated. They were fascinated to know about the patronage of rulers, the creative marks of artisans and differences in regional architecture was one of the reasons for such variation in monuments. This fascination became a significant point of expression in their activity outcomes.

Fairs such as Expos and Exhibitions can be used as a marketing site for museum outreach and promotion. In worldwide the museums collaborate with theme parks, airports, malls, markets etc. and promote their services. They create interactive corners to attract audience to actual museum site. Mumbai airport in India has a museum corner. Similarly at Udyog Bhawan metro station in Delhi, National Museum, New Delhi has setup a replica display which is a Museum corner. These examples are not meeting the actual need to educate the masses but they create a sense of curiosity to attract visitors on actual site of activity or learning. Many non government setups are available to collaborate and promote heritage and tap the potential of its collection with a different viewpoint and fresh approach. Such corners can be replicated to

develop a sense of presence of museums as significant sources of heritage keeping. This acts as a catalyst to enhance understanding about functions and services that museum can provide if explored wisely.

Children of all ages, who wish to know or visit a museum, should be motivated by parents or teachers. They can be provided with an understanding anywhere which has a proper set up of being learning space, formal or informal. A fair which provide such a situation is an alternative for providing learning experiences.

3.9 CASE STUDY 8

HERITAGE/ ARCHAEOLOGY CORNER, HICHKI MELA – LEARN WITH FUN

An open to all fair called Hichki Mela was held on 28th May 2017 at Gurugram. An educational and fun fair for children up to age of 12 years, was organised wherein a corner (Fig. 3.9.1) was exclusively related to archaeology, displaying artefacts and communicating information. Activities related to prehistory, world civilizations and Indus valley pottery and seals, was conducted by the researcher as a resource person assisted by Ms. Namita Malik (museum professional and freelance artist).

Fig .3.9.1 Researcher with Ms. Namita Malik at the heritage corner

The activity was executed as per the prior idea of allowing participants to choose whatever they wish to recreate by looking at sketches, books and replicas kept for their reference. It was a choice based participation of children who felt that archaeology can be enjoyed and explored through hands on sessions. The researcher made all the necessary arrangements that were to be done for activity. The backdrop of the heritage corner was aptly projected depicting the ancient city of Indus, designs of rock art paintings or pottery. Readymade kits that included pots, stones with smooth surface, mouldable clay, colours and reference books etc. were kept in the activity area. Apart from 2D sketches and books, small samples of pots (painted with designs), and stones (painted with rock art motifs), and replicas to be used as reference for hands on sessions, were setup in a corner of this event as kiosk. Reference sheets depicting various motifs, and scripts of different civilizations, were kept in order to give the participants full freedom to choose and create whatever they wish to make, that has a flavour of archaeological knowledge aspect in it.

Learning by Fun

The researcher acted as a resource person provided a platform for children to learn archaeological heritage. Replicas, images and sketches were shown to children to generate interest in the subject. Children were openly interacting and curiously asked about the objects. Some children had prior understanding about Indus civilization, and others were attracted by the artefacts due to curiosity to know. The researcher provided information about the objects and instructed the participant to draw and recreate in clay, or on pot/ stone. Younger children enthusiastically made figurines of animals and birds, TC masks, painted on stones, pottery (Fig. 3.9.2, 3.9.3, 3.9.4) which were interesting for them. Elder children did a good job in even recreating figurines of Mother Goddess.

Fig .3.9.2 TC mask making

Fig .3.9.3 Prehistoric art on stone

Fig. 3.9.4 Painted Pot

As the workshop was open to all, anyone was able to participate. It has been observed that the inclination towards creation of miniature Indus terracotta like clay models, prehistoric drawings on stones, and painting on pottery was dependent upon the interest of children and the parents or accompanying person.

Fig. 3.9.5 Kiosk and replicas produced

As visible in Fig.3.9.5, the participants recreated artefacts resembling the objects and images they observed around them. The output was authentic and very close to real object that reflects the understanding developed during the activity. Learning was amalgamated with fun and this led to a better exploration of facts by the young children. This kind of events result in creating awareness about archaeological representations of material culture, as well as act as a medium of observation to gather information of interests of children in an informal set up. These forms of observation reveal the learnt aspects and curiosity that is left behind after the exploration in books. The children who participated expressed interest in seeing actual artefacts. They were guided to visit the National Museum, New Delhi that houses collection of Harappan terracottas; which is nearest one for them. The children who were carrying back these souvenirs of educational yet fun filled activity, were happy

to recreate the artefacts resembling life of people, especially children if one can say, of bygone era, and they were feeling elated to get to know more about these hidden mysteries of past.

Initially Children remain curious to see the objects displayed, and after recreating the objects, they appeared to be attracted towards the field of archaeology as a subject of study and learning of the human past. Once they participate in activities similar to the Hichki Mela with heritage corners they were able to recreate the prehistoric paintings on small pots and stones, and clay figurines that resembled Harappan terracottas and many such interesting pieces of expression as decorative items and will be developing artistic skill and historic understanding.

Such hands on sessions make children aware of the possible options they can explore for knowing about archaeological collections and benefits of visiting museums. Museums are only sources that can meet these curiosities by showing the 3D representation that gives a sense of colour, size, texture, form or one may say a best vision of an archaeological object.

Such programs develop a sense of belongingness in youth and make them aware of the things they lack in school textbooks. Books are important but not an end to knowledge or education. The vast pool of knowledge lies beyond the periphery of a school or a formal institution. The four walls of a school are not the only temple of education, rather a media to teach basics of human life. It's a good question that how the crucial elements of life can be taught without considering the rich culture and heritage that our country possesses. Here the answer lies with the educators and the resources which can create opportunities for learning, throughout the visit and encourage young minds to voluntarily stimulate a sense of pride for heritage.

Physical encounters with real, authentic specimens foster awe-inspiring reactions among visitors that lead to understanding and thinking in the truest sense. Researcher's aim to access educational value in objects of archaeology led to creating activities that made learning effective and display was seen with a much wider aspects of disseminating knowledge in myriad ways.

CHAPTER 4

OVERVIEW OF ARCHAEOLOGICAL COLLECTION IN MUSEUMS OF INDIA

Shobita Punja (1991), renowned museum scholar opines that "The earliest Indian museums are more than 100 years old and have separate sections on art and archaeology, as well as galleries for geology, zoology, anthropology etc. The first important museum established was Indian Museum in Calcutta in year 1875. In parallel to these museums, medical, university and industrial museums sprang up, to encompass the wide range of interests and needs of the times". She also emphasises on the fact that museums in India were of British origins and had archaeology as a significant collection.

Report on 'Museums of India' by Markham and Hargreaves (1936), mention about with the opening of the new century there occurred an outburst of the establishment of archaeological museums throughout the country, mainly owing to the interest of Lord Curzon and development of the Archaeological Survey under Sir John Marshall. Survey was responsible in establishing museum at Sarnath (1904), Agra (1906), Peshawar (1907), Delhi Fort (1909), Mandalay (1905), Delhi (Central Asian antiquities Museum, 1929) and Lahore Fort (1928), in addition to half-a-dozen created on excavated sites. In 1911 came the first Directory of Indian Museums, and Dr. J. Ph. Vogel supplied to the Conference of Orientalists detailed information relating to each of 39 museums then existing in India. Museums have sprung up in many of the larger towns in India and in several smaller ones. The report mentions a total of 105 museums by that time (1936) in India.

The survey of museums in India through various dictionaries, on grounds of administrative control and finances broadly seven categories of museums came to light: national museums and national stature, state museums, site museums under the Archaeological Survey of India, museums under the control of civic or corporate bodies, museums of learned societies, university and department museums. During the research study, archaeological collections housed in few selected museums of different administrative setups were surveyed and studied. From the displays of selected museums (studied),

the Science centres at various regions in India that promote archaeology as a part of their display collection, the National Science Centre at Delhi with vivid display of heritage , is one of the finest example of the same.

Apart from the museums studied in Chapter 2 for proposing educational activities for them and the empirical studies done in chapter 3, the present chapter discuss about 15 representative museums visited and studied by the researcher to see the amount of archaeological collection in those museums, their communicative values, and educational potentialities to popularise the discipline of archaeology and ancient history.

4.1 National Level Museums

1. Indian Museum, Kolkata

The archaeological section of the museum represents stone tools, skeletal remains, proto-historic artefacts. The display was made communicable through the kiosk (Fig 4.1.1). It also has vast collection of sculptures ranging from 3rd century BC to the late medieval period. Varied collection of Gandhara sculptures, collections from archaeological sites like Taxila, Jamalgarhi, Peshawar and Swat valley are rare collections and significant in terms of cultural history of our country. The museum has a tactile corner in Sculpture section that is popular among children as they can move images of related display and learn about them. The reconstruction of the Bharhut Stupa is one of the most interesting archaeological display to make public know about the Buddhist architecture.

Fig. 4.1.1 Display of stone tools and evolution.

2. Salarjung Museum, Hyderabad, Telangana

The museum considered to be the largest in India, and is brain child of Mir Yusuf Ali Khan, the last of the illustrious personality of the Nizam family of Hyderabad. It has exhaustive collection from medieval to modern arts and crafts of India. Starting from range of toys, one can see dolls, Indian textiles, wood, bronze, jade, armoury, Indian paintings, European sculptures, paintings, Chinese and Japanese art, furniture etc. on display. The museum is a repository of rare objects from nearly all over the worlds, right from Europe to the Far Eastern nations in Asia, apart from chronicles of the rich Indian heritage- dating from the Mauryan to the Mughal dynasty and the rule of Nizams.

4.2 State Level Museums

3. Chandigarh, Government Museum and Art Gallery, Chandigarh

The museum has excellent collection of Gandhara sculptures (Northwestern frontier of Pakistan), especially the *Bodhisattvas,* paintings from Mughal, Basoli and Kangra schools, and contemporary art. There is a section devoted to display of stone tools in India, fossils and human evolution. The museum is frequently visited by children groups and organisations like Heritage Lab conducts tours and programs in collaboration with the museum. Apart from creative activities, various hands on sessions related to photography of objects or writing about their significance etc. are conducted, periodically. The most interesting collection is the Gandharan sculptures. Since majority of the Gandharan collection is located in museum in Pakistan, this collection is very important in Indian context. The museum can do many meaningful activities to popularise the Gandharan collection.

4. Government Museum, Ahar - Udaipur, Rajasthan

Present day Ahar, which was called “Aghatpur” in ancient times is situated on the left bank of *ayad* river. The museum houses excavated material of the site, Ahar area and excavated material from “Maheshwar- Navdatoli” hillock. The material comprised of grey ware, dish on stand, black red ware are typical pottery unearthed and displayed in this museum. Apart from archaeological

artefacts, made of terracotta, shell, copper, etc.; sculptures of Vaishnav and Jain association and some miniature paintings are also part of display.

5. Goa State Museum, Panaji

The current museum complex at Patto was inaugurated in 1996. Museum thematically depicts different aspects of the Goan history and culture. The aim of creating this museum was centralizing and preserving antiquities, art objects, culturally important objects of the State. Museum has 14 galleries comprising collection of sculptures, anthropology, numismatics, geology, environment, religion, history of printing, furniture etc. There were drawings of children on display at ground floor that reflected the active nature of museum for young visitors.

6. Orissa State Museum, Bhubaneswar, Orissa

Orissa State Museum is a multipurpose institution. It has rich collection of sculptures from 3rd C. B.C. to the late mediaeval period. The sculptures have been arranged to present the distinctive architectural ethos and specific artistic representations of Buddhist, Jaina and Brahmanical pantheon. It displays exquisite specimens of Orissan art traditions. Apart from these artefacts, epigraphical collections such as coins and manuscripts are also part of the display. The collections pertaining to archaeology are mostly displayed in the ground floor galleries of the museum.

4.3 Local Museums under ASI

7. Archaeological Museum, Amravati, Andhra Pradesh

The archaeological museum, Amravati situated on the banks of river Krishna was established in 1951 antiquities from the nearby excavated site of the Mahastupa, the majestic monument of the Buddhists were used for display. It houses the crystal caskets with the relics believed to be of Buddha, gold rudraksha mala with deeply ornamented pendant etc. other antiquities like semi precious stone beads, bangles of different materials, etc. from 2nd century CE to the medieval period are displayed. There is an open air gallery with a model of the Mahastupa.

8. Archaeological Museum, Chandragiri, Andhra Pradesh

Archaeological Museum, Chandragiri was established in the year 1988-89 in the Rajamahal, near Tirupati, Andhra Pradesh. It has rich collection of stone/metal sculptures and other cultural vestiges retrieved from other historical places like Gudimallam (Dist. Chittoor), Gandikota (Dist. Kadapa) and Yaganti (Dist. Kurnool), distributed in its Gudimallam, Yaganti and durbar hall, bronze and miscellaneous galleries. The museum houses a number of stone and metal sculptures of various divinities of Saiva, Vaishnava and Jaina religious affinity. At the entrance corridor the museum houses a corner with television and audio devices for the people to see the video of site and its archaeological and historical significance. It benefits the differently abled people (in wheelchair) as the museum has been developed in a heritage building (that has old architecture which cannot be violated by making lift) and to reach the first floor galleries one has to climb a flight of stairs. Moreover a *Son et lumiere* (sound and light show) is highlight of this place that uses technology to propagate the story of site and related historical events.

9. Archaeological Museum, Velha Goa

Functioning since 1964, museum is housed in the abandoned convent of St. Francis of Assisi. The collection of the museum consists of Brahmanical sculptures, Hero stones and Sati stones of the early and late medieval periods, portraits, coins, stamps, wooden and bronze sculptures, armoury etc. The ground floor gallery has a showcase display of stone tools and human evolution showing the simple and composite stone tools (Fig. 4.3.1). Museum also has a separate section for children (Fig. 4.3.2a, b, c) where they conduct programs related to heritage of the place. This was an additional feature especially designated to children and during visit researcher observed photographs of monuments of the region, drawings prepared (Fig. 4.3.3) by children on the walls of this Children Activity Centre. The activity centre had table and chairs for groups to assemble and use for activity. There were descriptive panels with aerial views of the heritage sites such as Mahadev temple at Kurdi dedicated to lord Shiva belongs to 13th century AD ascribed to Goa-Kadamba dynasty.

The allocation of space for young visitors indicates that this centre is a regular hub for activities and different age group children visit as the descriptive panels were suited to the level of senior children. There were few panels, 2D sculpture plaques on the walls just to give a feel of being in a museum.

Fig. 4.3.1 Display of Cultural landscapes and stone tools

Fig. 4.3.2a Children activity centre, Archaeological Museum, Velha, Goa

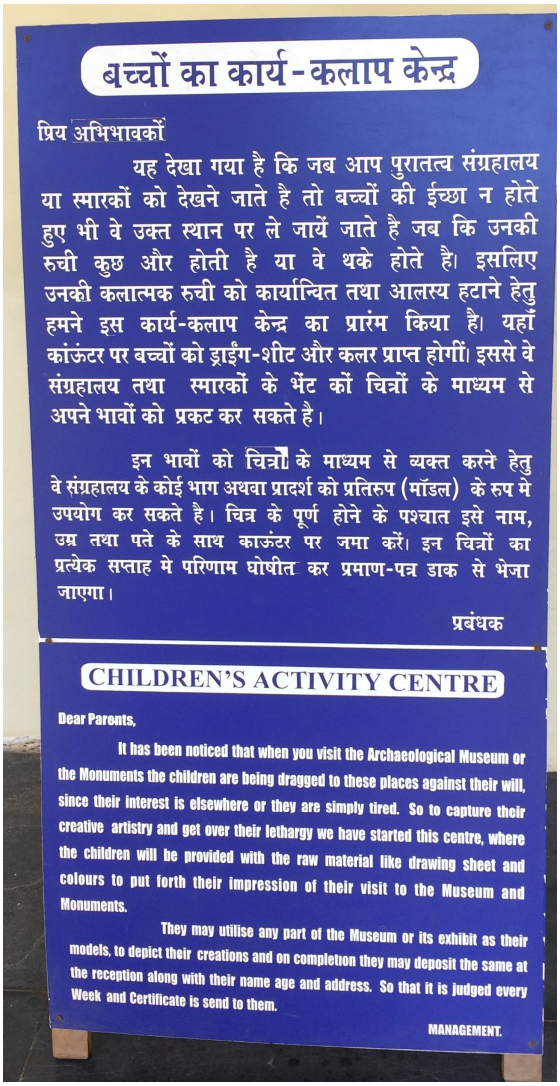

बच्चों का कार्य-कलाप केन्द्र
प्रिय अभिभावकों
यह देखा गया है कि जब आप पुरातत्व संग्रहालय या स्मारकों को देखने जाते है तो बच्चों की ईच्छा न होते हुए भी वे उक्त स्थान पर ले जायें जाते है जब कि उनकी रुची कुछ और होती है या वे थके होते है। इसलिए उनकी कलात्मक रुची को कार्यान्वित तथा आलस्य हटाने हेतु हमने इस कार्य-कलाप केन्द्र का प्रारंभ किया है। यहाँ कांऊंटर पर बच्चों को ड्राईंग-शीट और कलर प्राप्त होगीं। इससे वे संग्रहालय तथा स्मारकों के भेंट कों चित्रों के माध्यम से अपने भावों को प्रकट कर सकते है।
इन भावों को चित्रों के माध्यम से व्यक्त करने हेतु वे संग्रहालय के कोई भाग अथवा प्रादर्श को प्रतिरुप (मॉडल) के रुप मे उपयोग कर सकते है। चित्र के पूर्ण होने के पश्चात इसे नाम, उम्र तथा पते के साथ काऊंटर पर जमा करें। इन चित्रों का प्रत्येक सप्ताह मे परिणाम घोषीत कर प्रमाण-पत्र डाक से भेजा जाएगा।
प्रबंधक
CHILDREN'S ACTIVITY CENTRE
Dear Parents,
It has been noticed that when you visit the Archaeological Museum or the Monuments the children are being dragged to these places against their will, since their interest is elsewhere or they are simply tired. So to capture their creative artistry and get over their lethargy we have started this centre, where the children will be provided with the raw material like drawing sheet and colours to put forth their impression of their visit to the Museum and Monuments.
They may utilise any part of the Museum or its exhibit as their models, to depict their creations and on completion they may deposit the same at the reception along with their name age and address. So that it is judged every Week and Certificate is send to them.
MANAGEMENT.

Fig. 4.3.2b Board outside Children activity centre

Fig. 4.3.2c Interior view of Children activity centre

Fig. 4.3.3 Drawings displayed at Children activity centre

10. Archaeological Museum, Nagarjunakonda, Andhra Pradesh

Nagarjunakonda, in Andhra Pradesh, is an island museum in India. A specially designed building was constructed on the small hillock and the artefacts exhibited excavated from the Nagarjuna Sagar dam project site on river Krishna. The unique island museum was established in 1966 to collect, preserve and exhibit the antiquities retrieved from the excavations. These salvaged antiquities are housed in a spacious structure simulating a Buddhist vihara on plan. A cultural sequence from early Stone Age to medieval times was established during excavation process. The remains of more than seventy structures and an array of antiquities in various media including the reliquaries of Buddha and his disciples were discovered from the site. This information can be seen in the touch screen kiosk that is kept at the beginning of museum. It also gives details of the salvaged structures that were reconstructed on the site and at Anupu (land near the banks of river Krishna). Thus one digital source and all information make it easy for the visitor to access cultural heritage related information easily with interactive visual aid. This is a

significant application of digital technology to popularise the Buddhist religion and tourism in India.

11. Archaeological Museum, Sarnath, Uttar Pradesh

Sarnath is one of the four most important Buddhist pilgrimage centers, where Buddha gave his first sermon. Excavations conducted on site from 1835 onwards (till 2014) brought to light numerous structural and artistic remains. The recovered objects are now housed in the Archaeological museum, Sarnath, the oldest site museum established in 1910 A.D. There are five galleries for sculptures and two verandahs for architectural members in the museum so as to house and display the antiquities datable from 3rd century BC to 12th century AD Museum is in close proximity to the excavated site, thus understanding the context of the collection as a potential resource is easy for educators. These kinds of museums enable developing heritage site tours connecting the collections and curriculum. They can sensitize young visitors towards the archaeological discoveries that turn into National identity such as the Lion capital of Sarnath, is significant symbol of Indian constitution.

12. Archaeological Museum, Thanesar (Kurukshetra), Haryana

The area is rich in varied archaeological remains, first explored in nineteenth century by A. Cunningham. The collection had abundance of pottery, bricks and brickbats all over the mound ranging from early historical times to late Mughal and even modern. The results of past excavations have yielded interesting evidences about the rich material cultures covering a span of nearly two thousand years or more and it would be of interest to historians and archaeologists. Museum has sculptures, excavated remains such as terracotta, pottery, beads, terracotta sealings, copper objects, figurines, iron objects, shell bangles etc. The excavated area is in close vicinity of the actual museum thus a potential resource for conducting heritage site tour.

13. Fort St. George Museum, Chennai, Tamil Nadu

This period museum, organised and maintained by Archaeological Survey of India is fittingly located in one of the important buildings- The Exchange Building-of Fort St. George. The idea of setting up a museum in this building

to house the relics of the Raj found scattered in the Fort was mooted in 1946 by Col. D.M. Reid of Old Madras Guards. Organised in 1948, this museum now has more than four thousand artefacts of colonial period; best among them on display. Collection comprise of copper and silver medals and medallions, porcelain, portraits, prints, numismatic, uniforms and silverware etc.

Museum imparts training to the teacher trainees as well. It has tactile objects (Fig.4.3.4) corner that is part of learning aspects in the museum. The notable aspect that was observed was in the Coin display gallery. An interesting example is a coin gallery digital screen (Fig.4.3.5) in which an electronic chip based technology embedded inside a Creative Movement binder is used to see the obverse and reverse of coin in movement. This is a relatively new trend that was seen in an Indian museum.

Fig.4.3.4 Shields kept for tactile corner

Fig. 4.3.5 Digital chip based coin display technology

4.4 Museums under Corporate or Civic Bodies

14. Chhatrapati Shivaji Maharaj Vastu Sangrahalaya, Mumbai, Maharashtra

The foundation stone of museum was laid by the Prince of Wales on 11th November 1905 and the museum was named as Prince of Wales Museum of Western India. The museum was opened to public in 1922, and at present it is renamed as Chhatrapati Shivaji Maharaj Vastu Sangrahalaya (CSMVS) and houses approx. 50, 000 artefacts as an outstanding collection comprising of sculptures, terracottas, bronzes, excavated artefacts from the Harappan sites, Indian miniature paintings, European paintings and decorative arts from the far east. The Pre and Proto History gallery avidly displays the artefacts starting from stone tools to the chalcolithic period. Apart from programs for children on crafts, coins, clay activities such as pottery, museum provides information booklets and replica kits on Indus Valley Civilization. They also conducted hands on sessions on archaeological galleries as described in annual review of 2010-11. Review also mentions about the piece of old civilisations delivered to school describing the first kit launched by the museum which includes important artefacts from the Harappan Civilisation (Fig.4.4.1a, b). These

replicas are also circulated in schools within the region. Museum has Activity tent and Museo-bus that features activities and display related information especially for children. In 2012 they had programs likes ‘Harappan Holidays’ that focused on the civilizations gallery display including Mesopotamia as a point of discussion. Program like ‘Journey to the afterlife- Hieroglyphs decoded” was conducted for specially-abled children. Recently Museo-bus (2019) showcased the Numismatic collection and techniques with an informative leaflet to initiate the children to make individual coin in activity. The museum has brought out resource packs and CD that focus on archaeological display pertaining to Harappa. CSMVS has been conducting programs exclusively for children and cater to the young audiences with diverse ways. Audio-visual aids, touch screens, dioramas such as Great Bath of Mohenjodaro, and photographic panels, which help the visitors to acumen archaeological heritage (Fig. 4.4.2a, b).

Fig.4.4.1a Replica Kit of CSMVS

Fig.4.4.1b Harappan artefacts in Replica kit

Fig.4.4.2a Showcase in CSMVS on Harappan toys

Fig.4.4.2b Showcase in CSMVS on excavated sites

4.5 University Museums

15. Deccan College Post- Graduate and Research Institute Museum, Pune, Maharashtra

The Department of Archaeology at Deccan College has been engaged in Archaeological excavations and explorations in different parts of India right from 1939. The collections generated through years lead to the development of museum. The present museum has grown into a mature stage with Prehistoric, Chalcolithic, Megalithic, Early- Historic, Sculptural Art, Epigraphy and Numismatics, and Ethno-archaeology galleries. Excavations carried out at Jorwe, Nevasa, Chandoli, Inamgaon, Navdatoli, Kuntasi etc. yielded large number of chalcolithic antiquities i.e. pottery, stone tools (both microliths and polished stone tools), beads, terracotta objects, bone objects, human skeletal remains, animal bones, bone tools, copper objects like axes, chisels, bangles, rings, fish hooks, beads etc. The museum conducts extensive outreach and inhouse activities along with facilitating the schools and other institutions by providing guided tours. is frequented by school groups on request to the department. A notable feature is the stratigraphic (Fig. 4.5.1) representational display of site of Nevasa in Prof. H.D. Sankalia Memorial gallery, and similar display is developed in CSMVS museum also. A model of iron smelting

furnace at Naikund illustrating the significance of the same is an interesting display. All these complementary visual displays apart from archaeological artefacts create a sense of understanding about archaeological structures and settlements.

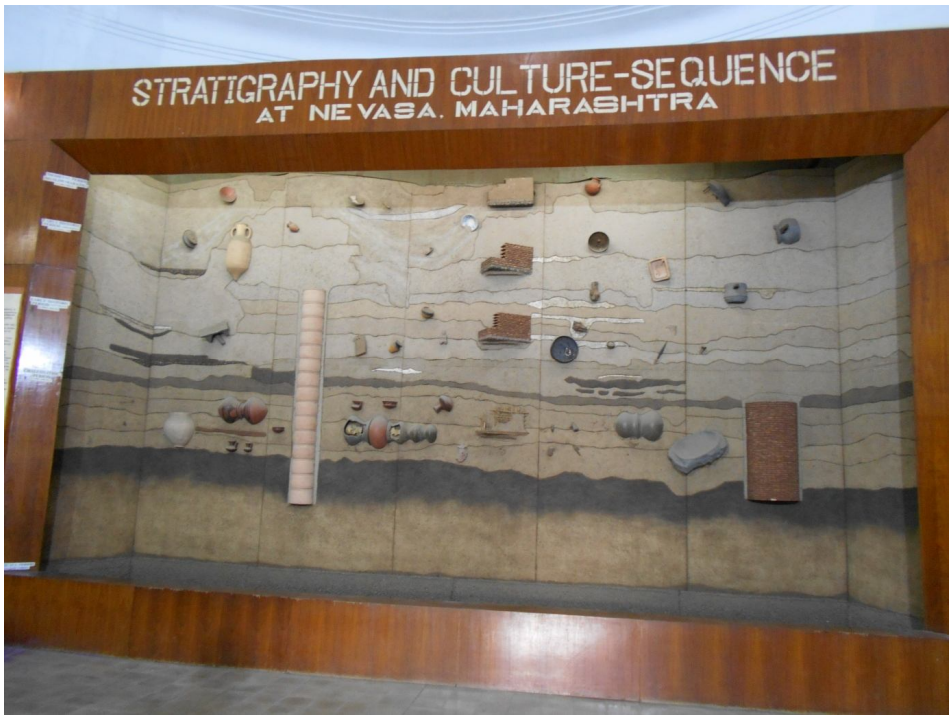


Fig.4.5.1 Stratigraphy (reconstructed) display

As quoted by Paris (2002) 'What is it about museums that make them unique learning environments? Museums are places where the objects and messages have been selected as ones of high cultural value- whether one is referring to a specific art collection, historically salient artefacts, or a collection of bones or scientific findings.' Many new museum displays are rich in objects and weak in interpretation: this appears to be based on the dual aims of reducing didactic content and returning power to objects (Knell et al. 2007).

The museums with significant collection of archaeology were visited to observe the display and type of communication occurring there on general daily basis. The table below summarises the survey of museums highlighting the aspects of communicative values pertaining to archaeological collection.

Sr. No.	Name of the museum	Interesting/ key archaeological collection	Communication strategies (communicative value- excellent/ good/ need to be improved)	Suggestions to improve the communicative value
1.	Indian Museum, Kolkata	Bharhut Stupa and Gandhara sculptures	Touch screens, outreach programs. (good)	Tactile tours using replicas can be introduced as sections of museum have replica displays.
2.	Salarjung Museum, Hyderabad, Telangana	Sculptures from Gandhara and Chola period, Egyptian art	Audio visual tour guide device, brochures (good).	Museum has rich collection from all over the world, thus gallery specific tours or selected collection based tours & programs can be introduced.
3.	Chandigarh, Government Museum and Art Gallery, Chandigarh	Gandharan sculptures	In house activities and outreach programs with NGOs like Heritage Lab. (need to be improved).	Activities related to study or iconography of sculptures or treasure hunt-exploration programs can be introduced as museum has

				enough space to move around in galleries on different floors.
4.	Government Museum, Ahar-Udaipur, Rajasthan	Excavated material of Ahar site	Museum brochure (need to be improved).	Guided tours can add to the interpretation and communication value.
5.	Goa State Museum, Panaji	Sculptures of regional-excavated sites	Museum brochure (need to be improved).	Guided tours can add to the interpretation and communication value.
6.	Orissa State Museum, Bhubaneswar, Orissa	Sculptures of regional sites	Museum brochure (need to be improved).	Guided tours can add to the interpretation and communication value.
7.	Archaeological Museum, Amravati, Andhra Pradesh	Remnants of Buddhist stupa (reconstructed)	Museum brochure, photos, maps, replica, (need to be improved).	Guided tours can add to the interpretation and communication value.
8.	Archaeological Museum, Chandragiri (Raja Mahal, Chandragiri fort), Andhra	Stone sculptures	Museum, brochure, audio visual corner and sound & light show (good).	Guided tours can add to the interpretation and communication value.

	Pradesh			
9.	Archaeological Museum, Velha Goa	Prehistoric display on evolution, Sculptures	Children activity area, TV for documentaries (good).	Guided tours can add to the interpretation and communication value.
10.	Archaeological Museum, Nagarjunakonda, Andhra Pradesh	Remnants of Buddhist stupa	Touch screen. (need to be improved)	Guided tours in museum and site can add to the interpretation and communication value.
11.	Archaeological Museum, Sarnath, Uttar Pradesh	Excavation material of site, sculptures of Buddhist pantheon	Museum brochure, Touch screens. (need to be improved)	Guided tours in museum and site can add to the interpretation and communication value.
12.	Archaeological Museum, Thanesar (Kurukshetra), Haryana	Excavation material of site	Museum brochure (need to be improved)	Guided tours can add to the interpretation and communication value. The excavated material displayed can be described in booklet form for a specific collection.
13.	Fort St. George Museum, Chennai, Tamil	Coins	Audio visual corner and TV, regular activity	Guided tours can add to the interpretation and

	Nadu		programs (good).	communication value.
14.	Chhatrapati Shivaji Maharaj Vastu Sangrahalaya, Mumbai, Maharashtra	Pre- and proto-history gallery	Audio visual aids and interactive kiosks, discovery kits and corners, regular collection based activity programs (excellent).	Museum is versatile in conducting programs, and variety of activities.
15.	Deccan College Post- Graduate and Research Institute Museum, Pune, Maharashtra	Stratigraphic (reconstructed) display of Nevasa	Tours for visitors –on request (need to be improved).	Programs based on collection and trips to archaeological sites can be introduced as a regular feature for children.

From this survey it has been found that archaeological collection is significantly displayed among various museums in India but the interpretation programs pertaining to archaeology is not a common phenomena in museums. Some museums introduced technology and awareness programs to publicise the essence of collection thereby increasing the turn up ratio or footfall of visitors. Audio visual aids, CDs, touch screens or mobile apps enhance the interest factor in the display thereby increasing the retention time of a visitor. Archaeology could be utilized for education needs, young people are more likely to grow up and vote for, and contribute toward, archaeology's needs (Jameson & Baugher 2007).

CHAPTER 5

DISCUSSION AND CONCLUSION

This research thesis is an outcome of an effort by the researcher to make the children understand and appreciate archaeological collections displayed in the museum and archaeological sites through museum education activities which would act as a supplement to the teaching and learning of formal school curriculum thereby using museum education activities for the popularisation of archaeology as a discipline. Jameson & Baugher (2007) mentions that, "telling children about the past means involving them in the learning process".

The first objective of research was estimating representative museums' presentation of archaeological heritage and the current utilization of the same as a source of education activities. The study provided valuable insights directing the ways and means which can be used in connecting the museum collections and activities that will enhance the archaeological knowhow provided in school lessons or curriculum. Study led to connecting children with museum education activities. There were all sorts of creative outcomes be it in the form of worksheets, posters, models, clay models, sketches and skit that came to surface when the analytical capacity of children was enhanced and they were motivated to observe and interpret the museum object in more comprehensive and authentic form. This study points out that, the curricula based books provided partial understanding of archaeological learning but viewing the original artefacts/replicas leads to more authentic, diverse and meaningful understanding.

Younger generation has fewer experiences than adults but the curiosity they possess about new and unknown ideas and concepts make them dynamic learners. To enable a child to see what people looked like and how they lived, the museum displays and collections can open up a window to history that no amount of text in a book can ever duplicate (Falk and Dierking 2000). The text books (NCERT) were explored during the research and it has been observed that they have developed some efforts in connecting archaeological collections

in museums. This enabled the researcher to chalk down the concepts in the form of activities such as worksheets, hands on sessions, lectures, and site tours and to introduce children to multiple experiences outside the classroom. The experiences for children throughout the study were informative, educative and entertaining and thus the creative outputs reflected the understanding they gained, post the program, offered to them.

A high quality research study for children includes a wide variety of creative methodologies such as observations, discussions, detailed interviews, and embedded activities such as designed games, drawing, and other cognitive and skill developing tasks (Paris 2002). Qualitative studies indicate and relate to the information that focuses on the responses of audience to the museum experience. Thus going through all the museum collections and associated texts, allowed the formation of myriad activities that focused on core idea of learning about the archaeological collections housed in museums of India. The hands on sessions or programs were pre-planned targeted to the age level of students/audience and had all means (questions, activities) of tapping the collection available in front of them to explore, observe and interpret. The children or targeted groups had different experiences in various setups and thus the creative outcomes too varied. They observed and understood the concept and then presented the learnt information on paper or some tactile form. The experiential learning exercises conducted by the researcher were dynamic and motivating for the students and participants to highlight their ideas, while learning and enjoying. Learning can be defined as a relatively permanent change in thought or behaviour, which might include cognition, opinions, skills or mindset (Hohenstein and Moussouri 2018). Children are sponges in absorbing knowledge; however they filter or interpret information using their own sets of rules or framework (Paris 2002).

It is rightly said by Susan Pearce (1994) that the meaning of the past does not reside in the past, but belongs to the present. The linkages that were connecting past knowledge with present day life, was a plus factor to initiate the modules of learning with children. The objects children see, use or experience in everyday life, act as the starter and the orientation sessions conducted in museum, school, site or other informal setups, had the key idea

to create a vision for past civilization of India. It is not an easy task to co-relate or explain which is unseen or not experienced by an individual. So the point of reference is always to begin from known facts to the unknown. The object alone is believed to be sufficiently powerful to engage the visitor and to prompt him or her to make connections with concepts and with the past (Knell et al. 2007).

Various models of *Object analysis* came to light that enabled enhanced understanding of child's cognitive abilities. Objects are loci and one can go in many different directions from them and, in the process, develop skills of close observation, questioning, discussion, description, documentation, comparison, making links and connections (Talboys 1996). Museum objects are invaluable aids to knowledge and thus are effective learning tools.

The study emphasised on effective learning experiences suiting to the collection of selected museums in India. In this context the cultural significance of collection and sites was looked into that made the activities interesting and informative as different places in India had different display setups. Physical contact with ancient objects is one of the most important aspects of archaeology teaching (Dyer 1983). As Paris (2002) indicated that, 'regardless of the object's authenticity, we cannot experience the past directly'. Objects can reflect information of the past but they are not end in themselves. Their connections and associations are to be derived and documented. Many museums provide object replicas which children can handle and experience. This is also an aspect of experiential learning when a child is allowed to feel, see and touch the object facsimile. They get familiar with the appearance of real object and the details that might have been missed behind the showcase display. Although a child should understand that the original object was the very first of its kind so far as it did not previously exist, whereas the replica is a copy of a previously existing object (Paris 2002). As a researcher, I collected replicas that associated archaeological artefacts of Indus civilization and used them as a point of reference for experiencing the real object on display for all educational activities conducted. These tactile resources are seldom used by schools in India. Developing the concept of Heritage corner in Allahabad Museum, Uttar Pradesh and CSMVS, Mumbai

was recorded and found as a great initiative from the museum sector to promote museum education. Also the concept of Mobile Van or Museo-bus served this purpose of taking museum experience to those who cannot come to the museum due to socio-economic or any other related factors. Mobile vans in the National Science Centre, New Delhi; The Government Museum, Chennai and CSMVS, Mumbai were found to be effectively out reaching. These exhibitions were effectively planned to deliver a tangible museum experience in remote areas thus a good resource of dissemination of information.

A central component to the process of assessing cultural significance is talking to the community which interacts with or values the site (Burke & Smith 2004). Tours enable visitors to see the site from a different perspective and help non-archaeologists understand how archaeology helps to tell stories and reconstructs historical meaning more generally (Jameson & Baugher 2007). Heritage tours conducted by the researcher on archaeological sites of Lothal and Dholavira could be claimed as productive as the children made to feel and understand through in-situ explanations at the site and the pre-visit orientation. Many archaeologists and cultural resource specialists are devising new approaches for public interpretation in a variety of settings and the venues for these activities can include visiting an excavation, a reconstructed site, stabilized ruins, museum exhibits, or a site treated as an open air museum (Jameson & Baugher 2007) and site visits acted as an effective strategy for the same. These are also good opportunities to explain the process of archaeology. It is not quite often in Indian context that school teachers take children to an actual archaeological site/dig. The challenge for archaeologists has been to make archaeology "come alive," to present archaeology as the dynamic field (Jameson & Baugher 2007). To some extent the location of site and the lack of proper infrastructure on site, is one among the many reasons. Also children might get bored or may not be able to imagine the archaeological significance of the site and how the objects/artefacts become museum display. To meet this shortcoming, few museums in India (National Museum, New Delhi) have started offering programs that relate to mock trench digging or exploring the sites. One of the most active organisations in India apart from museum is

Sharma Centre for Heritage Education (Tamil Nadu) who have been conducting programs and sensitizing children about archaeological processes and findings. They also published resources or books for children focusing on stone tools and archaeological learning. These sort of active learning approaches are difficult to replicate especially in schools that have dearth of staff or funds but museums could think to take up such activities in collaborations with schools, for developing various educational resources and activities can be initiated. The 5P model below (Fig. 5.1) could be used in explaining the educational learning perspectives in museums.

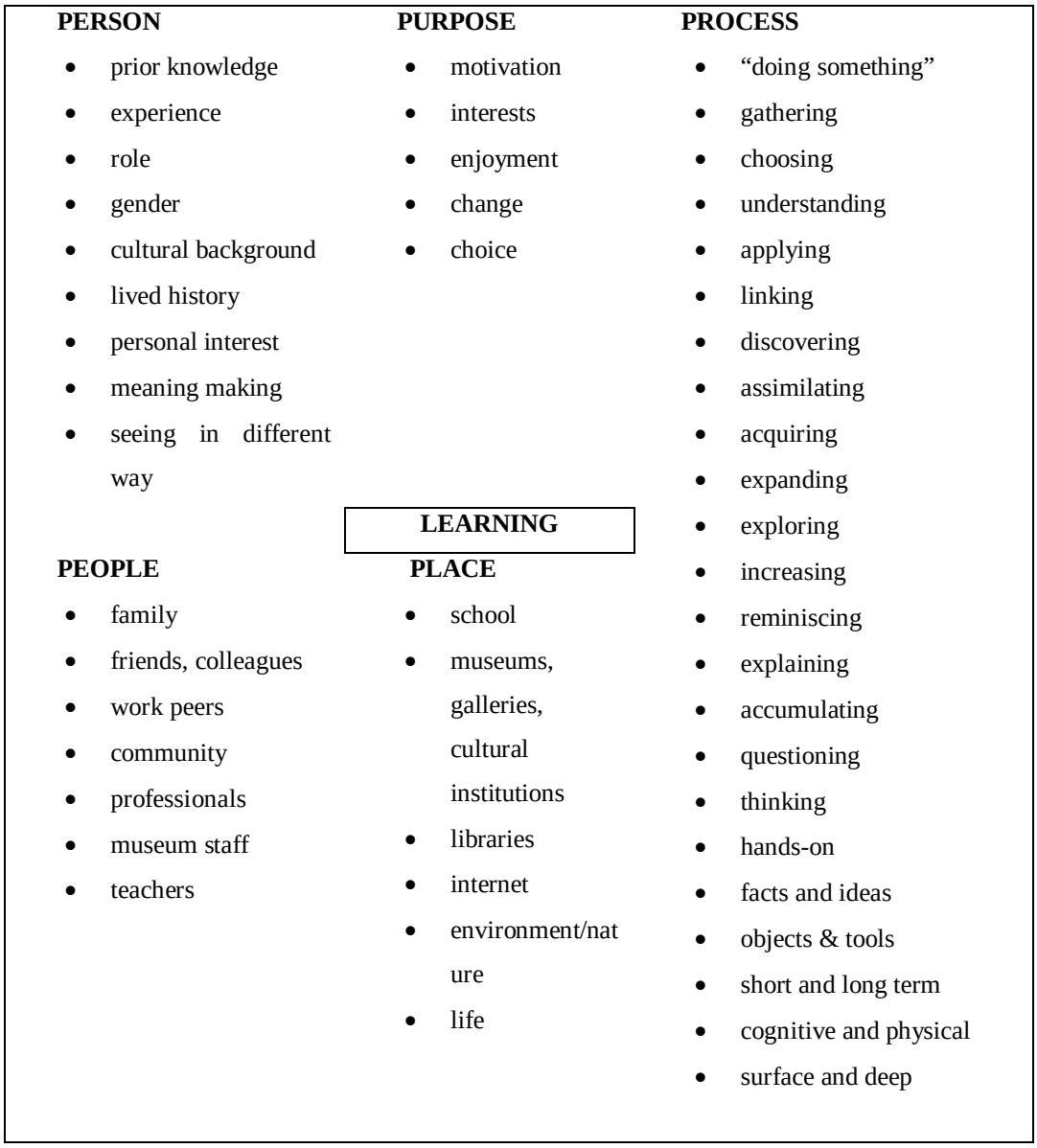


Fig.5.1 The 5P Model of museum learning (Source: Knell et al. 2007)

One among the objectives of research was to survey the interactive methods that are employed to attract different segments of visitors towards museums and their archaeological collections. In words of Henry M. Miller it can be emphasised that important archaeological discoveries and new insights are the result of hard physical work and intellectual toil, and reports and collections are the crucial and indispensible products that possess enduring value. It is through the inspired translation of these findings into effective, long-lasting exhibits that the greatest direct public benefit is achieved and people learn about their past through archaeology (Jameson & Baugher 2007). The capability of a museum collection that enable the visitor to learn about the context and concepts of the objects displayed is myriad and vast. Different visitors derive multiple information and multiple experiences. The transfer of learnt aspects from the viewed collection and acquired knowledge, to a tactile form (such as discussions, interactions, talks, survey forms, worksheets, and models) is somewhat essential to enhance the quality of museum experience. The data in the form of visitor feedback was collected from Allahabad museum, during one of the empirical case study. National Museum, New Delhi has volunteer program feedback form which provides the highlights of quality of museum tour and its effectiveness. Interactive experience comes as reality when visitors get the experience of touch screens, audio visual aids or could participate in programs with docents or resource persons, such as in lectures, talks, art appreciation courses and tours. This can increase the footfall of museum as there are chances of participants to get motivated and to revisit the museum with friends and family.

In Government museum, Chennai and in CSMVS, Mumbai the frequent/recurrent visits of school groups that are intimated through emails indicates the interest of teachers, children and parents to keep their pupils connected to the museum. Regional museums like Amreli, runs short term courses to benefit visitors. Kachchh museum, has frequent visits by local schools where by the students could enhance heritage learning and understanding ancient past. The growing number of audience in all the above said programs indicated the positive reflections on museum were creating in their area of operation. Thus in each year improved strategies, outsourcing of

program executors were inculcated in providing educational services in effective manner.

During the data collection and formulation, the learning models and theories that cognitive study scholars described in context of museum setups and heritage sites namely the Contextual Model of Learning or Informal Learning Environments (ILE) were also studied. Falk and Dierking (2000) elaborate that the Contextual Model of Learning posits that all learning is situated within the series of contexts. In other words, learning is not some abstract experience that can be isolated in a test tube or laboratory but an organic, integrated experience that happens in the real world. They further elucidate that it involves three overlapping contexts: the personal, the socio cultural and the physical.

Scholars like Paris (2002) referred Informal Learning Environments (ILE) as an inclusive term that refers to variety of community settings such as museums, zoos, aquaria, parks and botanical gardens. These (ILE) are generally characterized as learning based on objects and experiences rather than text, perhaps the key distinction between the traditional school and non school learning. But there are opportunities of amalgamation of the two that can effectively enhance understanding of the subject. Archaeologists bring archaeology to public schools through travelling exhibits, lectures, teacher and student workshops, and hands-on activities with artefacts (Jameson & Baugher 2007). As the site is to be interpreted and presented common man (non-archaeology audience) needs different approaches for planning and execution.

The basis of Contextual model of learning was to highlight learning as a process that happens over time. As museums offer free choice of learning it is in the hands of curators, educators and docents who engage audience (especially school students) repeatedly or regularly in order to keep them attracted towards and attached with museums. One tour or trip might not be sufficient to create interest or satisfy the curiosity of children. Thus regular programs that may be offered in consultation with educators at schools may enliven the experience and enhance the sensitization. Discussion linking the activity to information on culture and the archaeological process will help to

move the activity from simply a “craft project” to an archaeological education experience (Jameson & Baugher 2007).

Discovery kits are boxes of materials with instruction that are used in the classroom to educate about topics covered in the museum’s galleries (Jameson & Baugher 2007). It is a common practice in museums of Europe and America where teacher resource packs and tailor made tours are offered for school children. The resources like discovery kits that entail information to be explored and learnt can be put into practice by almost all the museums. A teacher resource pack (Annexure III) was designed by the researcher and attached with the thesis for the reference.

Educators whether in school or museum can be motivated to envision new ways of looking at the past by museum and site visits. By educating and teachers, the museum can enhance learning for students for generations to come. National Museum, New Delhi offers tours to teacher groups (from all over the nation) as a part of their learning modules they inculcate the significance of museum collection in their teaching. Situations using archaeology as the method for making children understand about the past include informal ways in museum learning environments (Jameson & Baugher 2007) where by each situation offers the potential for reaching children.

Policy makers such as Directorate of Education, Government of India have made school visits to museum mandatory as a part of education extension. However, it should move a step further and channelize sources to promote invaluable and irreplaceable archaeological heritage in near future. Many non-government organisations discussed in chapter 2 have been actively collaborating with educational institutions and museums, whereby promoting monument heritage and collections in museums. Offering archaeology in a useful form supplement for classroom needs creates a conduit through which an association of site preservation message can be conveyed (Jameson & Baugher 2007).

Since 2013, the regulation of school visits was managed by National Museum, New Delhi through programs such as Yuva Saathi. The officers were incharge of conducting lectures, gallery tours or simple creative activities like art or

craft that was with an aim to attract school children to museums and sensitize them to the museum culture. College and University students were trained to conduct structured tours for school groups. The post of a Museum Education Officer was created and is active in some museums in India since more than two decades. However, planned tours and regular conduction of educational activities is not common in the case of Indian Museums. In the present scenario of diversified roles and responsibilities of museum education officers, to assist them, museums had started outsourcing young museum professionals, researchers for conducting museum education programs along with field experts or educators. Curriculum-based archaeology programing offers archaeology for education related supplementary needs which better serve as educational outreach proved to be beneficial for the students and also for archaeology's stewardship needs for future (Jameson & Baugher 2007).

Museums in India have the potential to bring change in educational patterns and policies of the country. When visitors are asked why they visit museums, the reasons varied from learning experience, usually described as education, getting information, expanding knowledge or doing something worthwhile in leisure (Knell et al. 2007).

The third objective of the study was to survey representative museums, the existing potential of the museums and wherever there is the absence of regular programs, the best possible use of collection for the learning purpose has been explored and suggested. Chapter 2 provide a summary of programs conducted by the selected museums. Examples were suggested for developing tool kits or programs which can be developed and implemented in smaller museums like Watson museum, Rajkot; Shri Girdharbhai Sangrahalaya, Amreli; Kachchh museum, Bhuj; and the teacher resource pack produced can be used as a portable tool of educating nuances of archaeology in regional museums of the country such as Chandragiri, Amravati, Nagarjunkonda and those having archaeological collections based on the study and survey. As discussed above similar kind of activities could be replicated and conducted in all small scale museums across India could make a difference in the field of museum education and in making museums extend benefit to the society in true sense.

Another objective of research was to practically see the outcome or execution outputs of various activities conducted in different administrative setups of museums including activities conducted on sites with non-governmental institution and checking the effectiveness of practical methods using designed activities. The primary data for the aforesaid objectives, the methodology adopted was the use of basic tools of research such as survey forms, observation of workshops and questionnaires. The empirical case studies in chapter 3 reflect the strategies that were implemented to meet the aforesaid objective. Museum learning is always partially cognitive; it is primarily affective learning, concerned with changes in the interests, attitudes, or evaluations of the learner as much as with the cognitive content (King & Lord 2016).

The educational activities conducted during research through empirical case study provided varied outcomes through worksheets, drawings, description of museum galleries and visual and textual data is elaborately discussed in Chapter 3. The statistical estimation of two of the case studies was attempted to evaluate how the children/participants responded to the activity and the differential aspects of achievement. To estimate the extent of effectiveness of the worksheet method in supplementing and acting as aid in expanding the classroom teaching process, a school visit was organized at the Indus Gallery in the Department of Archaeology and Ancient History, Maharaja Sayajirao University, Baroda during 2012. The students belonged to classes 7^{th} and 8^{th} NCERT board visiting the department were divided into two groups while one group explored Harappan gallery, the second group was engaged in doing a pre-visit worksheet prepared by the researcher, on Harappan seals. The pattern of worksheet was multiple choice questions as well as open ended questions. This mixed pattern of questions, allow children to focus on writing their views openly without stressing much on each and every aspect they can recollect. In a way hints they get enable them to think and respond. Few interesting responses in worksheet are discussed herewith.

The drawing of the Harappan Unicorn seal (Fig. 5.2) was provided in the worksheet for identification. The responses were as below (Fig. 5.3). The number of students who gave different answers is shown in the chart. The pattern of understanding provided an insight to the researcher to discuss more about the same to the students during the gallery talk so as to make them have effective and authentic understanding.

Fig. 5.2 Picture given in worksheet

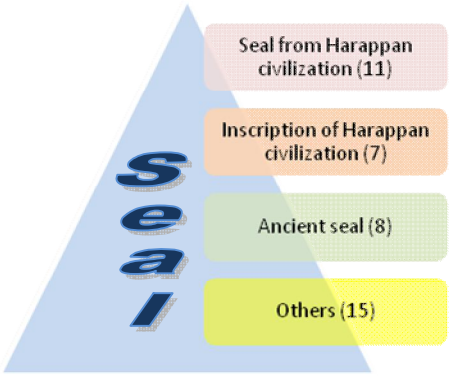


Fig. 5.3 Responses from students

The worksheet had questions related to the various depictions on the seal the symbols, its function, size and raw material (Fig.5.4).

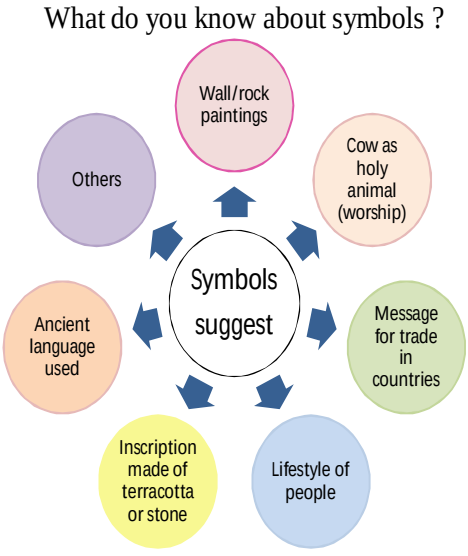


Fig. 5.4: Responses provided by students

Logical effort was made in the worksheet to ask students about description of a seal in their own words. The kinds of responses are shown in Fig. 5.5.

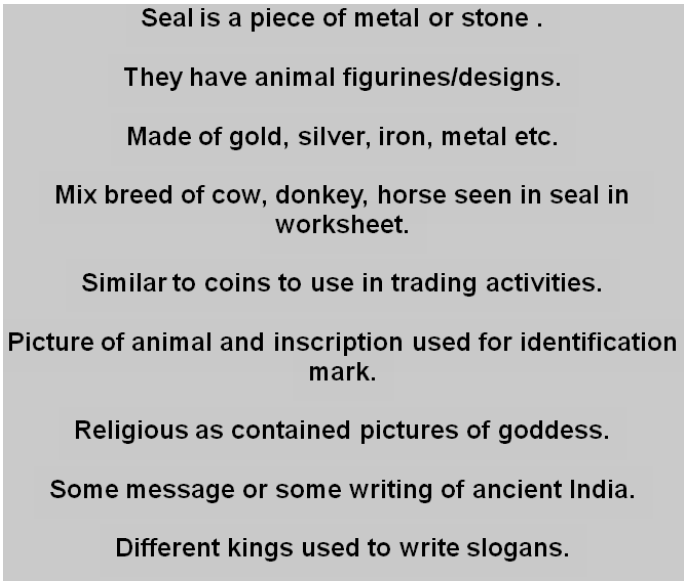

Seal is a piece of metal or stone .
They have animal figurines/designs.
Made of gold, silver, iron, metal etc.
Mix breed of cow, donkey, horse seen in seal in worksheet.
Similar to coins to use in trading activities.
Picture of animal and inscription used for identification mark.
Religious as contained pictures of goddess.
Some message or some writing of ancient India.
Different kings used to write slogans.

Fig. 5.5 Responses by children

A Powerpoint presentation was provided after the worksheet activity. Students were content after completing the worksheet and seeing the actual seal in museum. The result was inferred from the feedback session that students took along a lot of new information, not received during school. Such brainstorming sessions enable children to think in a different perspective and get interested in a particular subject/field of knowledge.

Activity with Post- museum visit worksheet was also conducted at Department of Archaeology and Ancient history in later visits. In this Post-visit worksheet the pattern of questions and activities were different and included more information related to seal. The students were of NCERT board, so were able to respond effectively. Most of them were able to answer correctly the name of seal (as few pictures of seals are also in their books with information), names of Harappan sites known to them. They had read in relation to this information in Social science syllabus which acted as an added advantage for the post visit activity. Activity sheet was fun and informative yet not like a class test, thus enabled varied outcomes.

Further, to compare the information imparted through Gujarat state board syllabus in school, a group of students visiting Baroda Museum and Picture Gallery (2012) of class 6^{th} and 7^{th} were selected. Due to time constraint, the teacher allowed 20 students out of the total strength of 64 students, to

participate in worksheet activity. Here 20 students considered sample out of 64 that had 10 students each from class 6th and class 7th. Teachers were co-operative and pleased with idea of the researcher and motivated students in completion of worksheet. Students were excited to try out worksheet activity.

The class 6th students had information related to Harappan civilization in their text books, but the seal has been referred as stamps. Information in Gujarat board book of Social science is less elaborate as compared to NCERT syllabus. The responses were collected and are presented below (Fig. 5.6) which class 6th students answered in the worksheet. Class 7th students were aware of some information but their results showed more of confusion rather than understanding about the seal. For instance most of them gave answer that seal might have been made of metal (raw material). This shows that class 7th students were not sure what the seal was neither they were able to confidently recollect about the artefact.

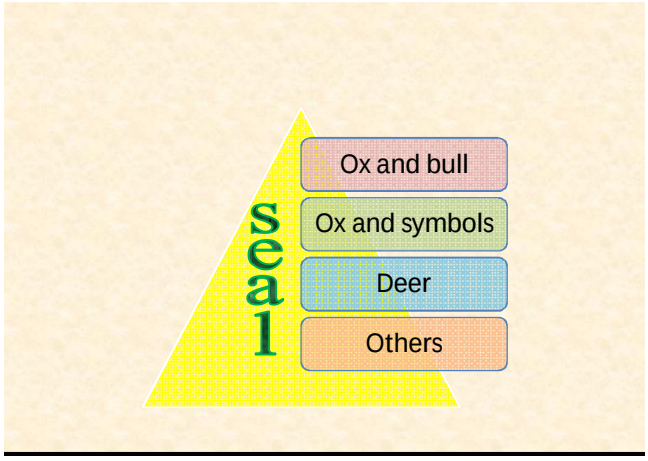


Fig. 5.6 Description of seal picture by students

The responses given by students of class 6th which actually studied Harappan civilization in their Social science textbooks were varying.

- The first question was related to identification of picture and most of the students gave answers like “Mohenjodaro Sanskriti” as an answer.
- Then the description of function of seal was quite astonishing as most of students wrote that it was a plaything.
- About the material children responded that seals might have made of wood. Other options selected were terracotta, selected by most of them.

- The description of seal was not very good as students were not aware about the details of what exactly this artefact was and why it is significant for Harappan civilization. Many of them responded that they don't know the answer properly.

For the second quantitative evaluation of the implication of worksheet was attempted during the empirical case study conducted at the Allahabad museum, Uttar Pradesh. It was focused on three galleries of display namely, prehistoric, sculptures and miniature paintings. After providing an orientation about the collection and purpose of the activity, children engaged in observation and conduct worksheet tasks within the galleries. The activity had almost 30-35 participants each day. Most of them were confident in describing what they observed in the galleries and drew sketches to complement their expressions, which is explained and represented in Chapter 3. The following chart (Fig.5.7) shows the pattern of answer by the students as well as their preferences of display.

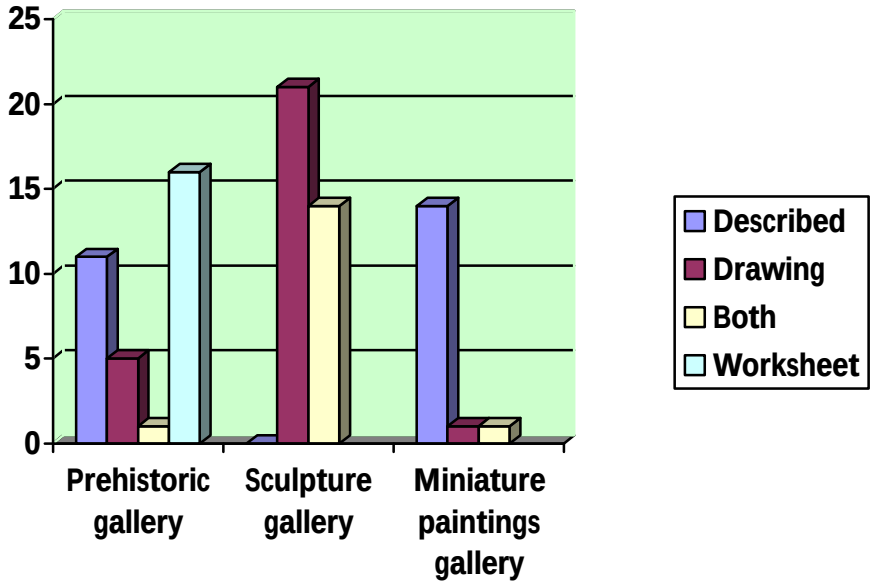


Fig. 5.7 Expression of participants summarised

Through this analysis it can be inferred that by observation of artefacts in museum, participants were artistic and descriptive about the knowledge acquired by this brainstorming hands on session. They tried best to describe

the sculpture or painting and added a special touch of artistic skill to supplement the feedback/output as per their understanding. This reflects that children can effectively use the object as a source of learning in a quick and versatile manner. Children have developed cognitive skills to recreate the display or artefact to express their acquired knowledge. This way child who only described the display can be motivated to create a picture that is visually created in mind. This exercise also enabled the researcher to understand the effectiveness of display and the text (label) through the response of the young visitor. This indicates that, the appeal and effectiveness of the content and display could be improved to give maximum benefit to children.

Similar activities like quizzes or workshops enable to check the effectiveness of syllabus in school teaching. A teacher can act as a very good source of inspiration and information if he/she is himself/herself acquainted with more information and ideas to take children out of the four walls of classroom. Outdoor visit to a museum and such places relieves a teacher from taking classes and in turn creates learning a fun activity. It creates the spark of knowledge that can be gathered out of the periphery of school.

While comparing the museums and archaeological sites from international context that offer programs on archaeology it has been found that, we in Indian context need to go a long way. Archaeological sites in developed countries are active in conducting variety of programs for the same and therefore suggestion for conduction of 'role playing' activities in Indian museums are expressed in chapter 2. People have experiences with objects for many reasons and possess predetermined expectations for what those objects and experiences will hold (Paris 2002).

Heritage attracts the attention of visitors to a location or site by providing a sense of place, a sense of purpose, and a sense of uniqueness for the community or group (Jameson & Baugher 2007). Archaeological research may generate sense of mystery and stimulate the interest in the subject/field of knowledge. In heritage tourism, we harness people's fascination and sense of connection to the past and turn it into a commodity (Jameson & Baugher

2007). Combining heritage with aspects of tourism, aids in promotion and propagation of the cultural sensitivity among the masses. As informal learning environments, museums are increasingly positioning themselves in the market as places for rich learning experiences (Knell et al. 2007).

Thus active participation of children today may concretize the future foundations of the museums in India. Connecting past and learning aspects of the invaluable heritage will act as catalyst in this process. The process of visual literacy of deriving meaning from the archaeological artefacts is not an easy task. As rightly said by social studies curriculum specialist George Brauer that 'educating students about archaeology as part of the life learning experience is an effective and too often overlooked means of bringing the public "on board" as archaeological stewards'. Museums in India have potential to generate opportunities that can propagate and protect archaeological heritage for posterity. The future of museums in India is on a promising path and the aforesaid educational activities will enable the museums to bring more dynamism in their day to day functioning.

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ANNEXURE - I

(Courtesy: Srikumar M. Menon)

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Terracotta Toy Artefacts of Harappan Culture: A Medium of Learning for Children

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Abstract: *The objects identified as toys by archaeologists and scholars of art, associated with different cultural milieu can be used as a learning material for children of various age. If children were allowed to experiment with various medium and translate their ideas into shapes and forms, through playing and doing, learning will happen automatically. Children should therefore be exposed to such opportunities of doing and learning, which in turn will enhance their skills. Material evidences testimonies the use of clay as a popular medium for construction of toys during the ancient times. The present paper is an attempt to demonstrate the use of terracotta toy artefacts associated with Harappan Culture as a medium of teaching and learning for school children so as to make them understand the cultural contexts and the associated materials in better perspective.*

Keywords: Terracotta, Toy Artefacts, Harappan Culture, Learning, Children, Museum, Workshop

Introduction

The toys are generally considered as part and parcel of children's life and they help in developing the child's personality and character in many ways which tend to reflect in the thought process of child's mind. The things with which the child first comes in close contact when his mind begins to grow and which give him a glimpse of the larger and real world outside his nursery are his playthings (Dongerkery 1954). Defined by Lonnqvist (1992), "the toy is an element in children's creative activity as a whole. This is irrespective of type, material, production and historical time of use" (c.f. Rogersdotter 2006). Since toys are intimately connected with the activities of the children, who used them for playing and also with adults who designed/made the toys for children; the toys are significant class of objects for student of civilization who attempts to reconstruct the story of the mankind, with the help of toys (Dongerkery, 1954). Educational research has led to the production of many types of toys which assist children in sensory training and mathematical calculation, and teach them to

acquire skill in doing various things (Dongerkery 1954). From an educational point of view, the toys help the child to manipulate parts of the adult world.

Discovery learning approaches have accepted the idea that learning is an active process, that learners undergo changes as they learn, that they interact with the material to be learned more fundamentally than only absorbing it, that they somehow change the way their minds work as they learn (Hein, 1998-2002). Jean Piaget, a scholar of developmental psychology regards intelligence as a system of structures which assimilate the newly acquired experience with that of known and accommodate the latter to the fresh experience (Paddayya, 1981). Archaeology is probably the latest branch of knowledge to come under the influence of Piaget's genetic epistemology (Paddayya, 1981). Piaget has described 3 developmental stages and the second stage is termed as the period of preparation for and development of concrete operations, dealing with children of 2 to 11 years of age. As per Piaget's operational stages of cognitive development in humans, symbolic play (making toy objects) and imitation are two other manifestations of early childhood and improved representational ability (Paddayya, 1981).

In the archaeological discoveries, objects tend to be interpreted as toys, when being quite common, when not being particularly elaborately styled as well as when found scattered all around the settlement (Shinde 2004, c.f. Rogersdotter 2006). The objects identified as toys by archaeologists and scholars of art, associated with different cultural milieu can be used as a learning material for children of various age. If children were allowed to experiment with various medium and translate their ideas into shapes and forms, through playing and doing, learning will happen automatically. In play therapy toys are viewed as the child's words and play as the child's language; a language of activity (Landreth & Bratton, 1999). The toy is proposed as a thing in which the child may canalise its feelings towards adults (Rogersdotter 2006). Children should therefore be exposed to such opportunities of doing and learning, which in turn will enhance their skills. Toys or playthings are made up of variety of material such as clay, wood, soft stone, paper machine, cotton, straw, shells and metals. Clay was a popular medium of construction of toys during the ancient times as evidenced from the material assemblages. The present paper is an attempt to illustrate the terracotta toy artefacts from the first civilization of the Indian Subcontinent, popularly known as Harappan Civilization as a medium of teaching and learning art, craft, history and culture to school children.

The Harappan Toy Artefacts

The Harappan Civilization is well known for its technology, art and craft. The wide range of artefacts unearthed provides an insight into the diverse and innovative lifestyle of the inhabitants who were eager to put their creativity in almost everything they made and left behind. Apart from the architectural edifices, sculptural masterpieces, pottery and other artefacts that bear the testimony to the life of Harappans, every object unearthed extend the archaeologists' thoughts with

mystifying stories and theories of the people of that time. Toys are not only an index to human activity but reflect the strong undercurrents in the structure of society (Dongerkery, 1954). The Harappan art was both elite and popular, and the very famous inscribed seals are assigned to elite category while terracotta objects such as mother goddess, human mask and toy cart and animals come under the popular category.

Large number of objects have been assigned toy status but some of them that look morphologically simple might have been used for amusement and others for teaching children to socialize their role as adults. The materials of Harappan toys mainly originate from all around the settlement (c.f. Rogersdotter 2006) and the remains of toy objects like terracotta wheels or discs occur within habitation layers, adjacent to structural remains like floors. The silent archaeological record can provide further information if the evidence is analysed according to the context of objects found, the association of terracotta figurines within their group and in relation to other artefacts and to the structural remains (Jansen, 2002). Various artefacts such as diverse figurines, miniature carts and others, mostly in terracotta, are frequently found to be briefly mentioned as toys in traditional Harappan accounts (Rogersdotter, 2006). Besides terracotta, other materials used for making toys include: faience, stone, shell, copper and bronze. Large numbers of toy artefacts from archaeological contexts are usually made of terracotta might be due to the easy availability of clay locally. Among the terracotta toy artefacts the dominant category was figurines of animals and birds followed by cart frames.

Animal and Bird Figurines

The presence of animal figurines is a common feature observed in almost all major urban centres of Harappan Civilization and domestic and wild animals were represented in terracotta as figurines. The animal figurines include bull, dog, horse, ram, pig and rhinoceros. Figurines with moveable heads and holes for attaching wheels also said to have used as toys. Wavy lines on the neck of the terracotta animal figurines along with other features and making techniques observed on the TC objects discovered from Harappa and Mohenjo Daro suggest their provincial style. Squirrel, monkeys, parrot, duck, snake, mongoose and tortoise are among other creatures which are realistically created and at times coloured. These popular artefact categories reflect the type of animals and birds seen during that time and skillfully copied them in clay by the Harappans. Through portrayal of strength and vigour in animal figures the terracotta craftsmen exhibited their mastery over the technique. Many bird figurines are hollow inside, and peacocks, pigeons and ducks are represented in the form of figurines and are painted on pottery as well. A man holding a duck, a mythical bird with wheel, a bird in the cage, a peacock and hen are unique specimens of bird images and sculptural representation. Pear shaped cages were specially made to keep the birds, and this might have been one of the hobby of people of the past which is reflected through terracotta models of bird cages. Few such specimens are displayed at the National Museum, New Delhi's, Harappa gallery as well as in Lothal Site Museum, Lothal.

Toy Carts

Living on the flat alluvial plains, the Harappan people had developed several types of two-wheeled carts, some of which are preserved in the form of clay toys (Kenoyer, 1998). Scholars are of the opinion that, the toy carts in Harappan cultural milieu resemble the actual carts created in wood and Terracotta toy models used for transportation purpose. Such models resemble the carts which are prevailing even today at various places of India and Pakistan. Some terracotta toy carts have solid floors and side bars; others have hollow frames and holes for setting removable sidings (Kenoyer, 1998). Many of these hollow cart frames which resembles the actual carts claimed to be used for carrying huge pots filled with milk or oil for trade. The terracotta wheels were attached to terracotta carts with frames which were even v-shaped or concave.

Learning through Terracotta Toys from Museum Collections

Museums add special values to the formal school and college education system, as part of the informal sector of education through which the museums enlarge the formal education and offer different ways of learning, enjoyment and discussion (Boylan, 2004). Objects and artefacts typically form the basis of a museum display, but on their own they contain none of the desired meanings. The aim of the display is to give the public access to a way of life through a collection of objects. The meanings that must be communicated concern relationships, involving one or more of the following: (1) origins, (2) manufacture, (3) use and (4) place in a system of values or meanings. The message or meaning which the object offers is always incomplete and we all fill the gaps in our own ways (Pearce 1992). Value accrues to an object according to the place it is given in the classificatory system and it becomes legitimate by the institutional signatory (Pearce1992).First-hand information with learning materials tantalizes senses not usually exercised in symbolic school experiences (Hooper Greenhill 1999).

Many museums in India have the privilege of possessing and exhibiting Harappan cultural materials in their collection namely National Museum New Delhi, State and District Museums of Punjab, Haryana and Gujarat, Museums in the universities such as the Maharaja Sayajirao University of Baroda, Deccan College, Pune and Rajasthan Vidyapeeth. The site museums under the jurisdiction of Archaeological Survey of India at Dholavira and Lothal showcase a major part of the Harappan material remains unearthed from the respective sites. Museums add special values to the formal school and college education system, as part of the informal sector of education. They enlarge the formal education and offer different ways of learning, enjoying and discussing (Boylan, 2004). The objects in museums can provide the knowledge and stimulate thinking skills, social and academic skills, and values and attitudes that can help to achieve society's goal for multi-cultural living (Hooper Greenhill, 1999). Gordon Childe succeeded in bringing home the realization that archaeology is not interested in the objects *per se* but studies the societies who made them – their economic, political and social institutions, material culture, and religious and ideological aspects (Paddayya,

1981). The very nature of a museum holds up promise for the future of education (Wittlin, 1970). Museums and gallery collections offer rich and dense experiences that can be recalled and valued over long periods of time (Clarke et.al 2002).

To convey the meaning of the museum object and to enhance understanding, a range of educational methods can be used. Here, the learning process evolves through thinking, perceiving, examining and recognizing (Boylan, 2004). Emotionally significant experiences can be expressed more comfortable and safely through the symbolic representation the toys provide (Landreth & Bratton, 1999). The objects themselves become the focus of activities; judgement, interpretation, appreciation and meaning making (Leinhardt et.al.2002). Therefore, the terracotta toy artefacts from the Harappan Civilization sites can be used as a medium for teaching and learning art, craft, history and culture to school children.

Engaging children into a creative way of education, which includes practical application of making a replica of an artefact, is the way of introducing the concept that was prevalent in the past and continued till present. Learning by doing leaves a much long lasting impact and thus as child uses his/her imagination and creative instinct, the object formed adds to the whole idea of transmission of knowledge from one generation to other. Educational research has led to the production of a number of toys which assist in sensory training and mathematical calculation, and teach children to acquire skill in doing various things (Dongerkery, 1954). Clay being an easily mouldable medium for creative endeavours, children love to experiment, play and learn, if indulged in an activity with it. Here the success is visible once the final form arrives out of the lump, giving shape to imagination and understanding that stayed in the mind of the child.

According to Connolly (1914), the best teaching is that which causes the pupils to apply promptly the knowledge that they gain. The teachers who teach the curriculum related to ancient civilization in schools are usually aware of the cultural materials available in museums. But many a times the teachers were not able to provide an opportunity to the children to explore museum collections with a view of knowing its significance to cultural and social aspects. The level of understanding and learning can be enhanced by engaging the children by involving them in making or replicating objects from the collection, in order to enable the young ones to imbibe deeper perspectives of the object. Hands on activities like replicating museum objects, mainly archaeological objects by using moulding mediums like clay or plaster, along with a prior orientation and understanding of the process and the techniques of making of the same in actual archaeological context not only enrich the students but also add the educational value of the object. Among the various museum collections, toy objects made of clay, i.e., terracotta forms the major group. Majority of the museum collections of Harappan culture showcase a variety of animal and bird figurines, in various forms and postures, painted or incised ones, crude and finely carved ones made out of clay. Cart frames and wheels form another group of toy artefacts.

The NCRT and the Gujarat state board included Harappan civilization as a part of course taught in the social science curriculum from 6th class onwards. Gujarat state board social science book cover the Harappan civilization as '*Story of Harappa*' and also mention about terracotta;…*"many terracotta toys have been found and a long time ago children must have played with these."…* followed by depiction of toy cart through an image. Similarly books of NCERT also describe cart and animal (unicorn) figurine as toys found from the remains of Harappan Culture. These text books are meant for the young ones to learn and understand about the material remains of the first civilization in Indian context, further state "*many terracotta items of animals, carts, toys and human figures were recovered from the sites*". It is observed that Gujarat state board books touch upon idea of terracotta toy Harappan artefacts very briefly, with very few images to furnish the information. The data and information being very limited in the text books, children often lack the clear understanding of various aspects related to the unique aspects of the first civilization of the Indian Subcontinent. Therefore, hands on sessions for the children of 6th grade were designed to supplement the school curriculum after close comparison with the same.

Activity1: Clay Workshop at Experimental School, Vadodara

In order to make the children undergo active learning of museum objects, hands on activity sessions were conducted whereby opportunity was extended to children of 6th grade to have close observation of the museum objects, i.e., actual archaeological terracotta artefacts from Harappan cultural context followed by session on replicating the actual artefacts by using clay. This workshop was an effort to make children understand terracotta objects found from various Harappan sites (Figure 1) and uniqueness of them as cultural materials.

Figure 1: Original Terracotta Objects Displayed for Close Observation for the Students (Courtesy: Department of Archaeology and Ancient History, MSU Baroda)

This activity was also aimed to motivate children to explore this theme beyond the school text books and to encourage frequent museum visits in order to observe the original objects. The act of conducting a workshop by enabling students to experience doing and learning, was also aimed to estimate and understand how school children learn and recreate an artefact of an ancient civilization through fun activity. Clay is a good medium in making children understand and create three dimensional objects. The students who were selected for the sessions already had a prior acquired understanding about the Harappan civilization from their textbooks through class room learning.

Figure 2: Orientation about Harappan Culture Prior to Activity Session, Experimental school, Vadodara

During the workshop, firstly the students were provided an orientation about the Harappan culture, its materials assemblages and in detail about terracotta objects specifically through power point presentation by the second author (Figure 2). Secondly the students were provided an opportunity to closely observe the original terracotta toy artefacts from Harappan sites, collection belonging to the Museum of Archaeology, Department of Archaeology and Ancient History. Handling good replicas also will help the pupils to get familiarity with the main types of objects (Dyer, 1983). After orientation and close observation of the real terracotta objects, students were provided with clay to replicate the Harappan terracotta objects.

As an outcome of the workshop, children created (Figure 3) different variety of animals (like elephant, camel, deer), human figurines, masks and cart frames (with and without

rider). It was noticed during the activity session, the clay moulding process and designing was done by children included methods like pinching, incising and appliqué (for eyes and nose). Though this activity was fun filled for children, along with enjoyment, this practical session left a positive impact on children about Harappan culture and the terracotta art. The children were found immersed in recreating variety of terracotta figurines by applying their ability & thoughts to create variety of figurines. The interaction with the actual materials and recreation of the same provided the students with better learning opportunities beyond classrooms.

Figure 3: Doing and Learning: Replicating the Terracotta Objects by the Students

As people learn, their capacity to learn expands; the shape and volume of the mind's warehouse is transformed by the process of grappling with the new information (Hein, 1998-2002). It also provides insight for innovative means of teaching. Through this workshop, the imaginations of children lead to the creation of excellent pieces of moulded clay figurines that resembled many TC artefacts of Harappan terracotta. The greatest success can come from three dimensional model making and in the primary school this can develop to unlimited lengths (Dyer, 1983). Hooper Greenhill (1999) opines, knowledge is acquired in a continuous process of accommodating prior expectations and beliefs to new realities learned through interactive experiences. Finally, the conduction of the workshop proved to be fruitful and creative endeavour in adding the knowledge and skills to school children.

Activity 2: National Museum, New Delhi

Drama and theatre are powerful media to draw visitors into a scene, make the human connection to objects apparent to some, and allow visitors' imaginations to expand and associate rich meanings with the objects displayed (Hein, 1998-2002). A theatre workshop was jointly organised by National Museum, New Delhi and Herithart, for students of class 5th to 10th. The performance by Herithart was designed around the Harappa gallery, which is one of the most popular galleries amongst archaeology and history in the National Museum, New Delhi and is frequently visited by heritage lovers. The students of various schools, colleges and scholars of various fields are equally attracted to explore this collection so as to connect themselves with the testimonies of the ancient past.

Figure 4: Orientation about the Objects Prior to Hands on Activity Session, National Museum, New Delhi

Session on clay modelling was conducted by the first author (Figure 4) based on the terracotta objects displayed in the gallery. This workshop was aimed to enable participants to have better understanding of Harappan Civilization and also to appreciate the art and craft of the same. Asking questions about the object requires an understanding of the potential of artefacts to reveal information about the societies that made, used and preserved them. The main emphasis of the work should be on observation not reading (Hooper Greenhill, 1999).The students were provided worksheets to write their responses based on their theoretical knowledge. Children recreated almost all varieties of Harappan terracotta including wheeled toys and terracotta bangles. Objects made by the participants were used in the enactment of the drama/play which not only brought a sense of happiness and encouragement to the

children but also added enriching flavour to the gallery based performance. Museums provide information and stimulation by means of objects, in distinction from libraries or classrooms, where experiences are generated by symbols, by the written or spoken word (Wittlin, 1970).

Discussion and Conclusion

Museums furnish first hand experiences and allow children to learn by discovery method. The proponents of discovery learning believe that in order to learn, students need to have experience; they need to do and see rather than to be told (Hooper Greenhill, 1999). An artefact communicates by being what it is and potentially accessible to every sense, so much so that it can be seen, tapped, touched, handled, smelt and even tasted (Hooper Greenhill, 1999). The multi-sensual experience could communicate a complex and open set of messages with an incomparable vividness and immediacy (Hooper Greenhill, 1999). James Dyer (1983) opines, enthusiasm for learning develops to its fullest extent in the primary school. Up to the age of twelve or thirteen most children can be motivated to take an interest in almost anything and is applicable to the discipline of archaeology. Since the objects of archaeology possess strong elements of discovery and the mystery associated with it strengthen its appeal. The activities mentioned in this paper stimulated the children to learn about the terracotta toy objects in the museum display through fun learning.

Museums are remarkable sites for learning about objects that have myriad meanings hidden in their form. Students at each level will see a specific object through the eyes of their own experience and they will bring to it their own questions and make their own observations (Hooper Greenhill, 1999). Objects are seen as the outcome of thoughts, feelings and decisions which have been taken elsewhere, and of which they deemed to be a simple mirror image (Pearce, 1992). A major advantage of using objects in teaching is that, unlike print material, objects are neither age-specific nor tied to a particular grade level (Hooper Greenhill, 1999). These viewpoints were kept as the backdrop while designing the activity sheets as well as in conducting the clay modelling sessions.

Talboys (2000) opines, artefacts are inherently cross curricular in their nature and can be studied from a number of different viewpoints. Keeping this aforesaid view, the attempt of conducting few workshops for children was undertaken as discussed in the paper. An amalgamation of text, practical activity and an archaeological object in close proximity of the child enable each one of them to imbibe the concept and understand its co-relation with archaeological findings. The activities mentioned in the current paper stand as true testimony for the same and sessions enabled the children to learn better being in close proximity of the subject and object. They receive and imbibe information that must have been highlighted in many books but were not as per their understanding level. The activities discussed in this paper clearly illustrate that engaging children into a creative way of education, which includes practical application of making a replica of an artefact proved to be one of the best way to introduce the concept to the young minds in an efficient and effective way, which is

true for archaeological objects. Also the kind of interaction with the actual materials and recreation of the same provided the students learning opportunities beyond classrooms.

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ANNEXURE - II

URKUND

Urkund Analysis Result

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URKUND

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URKUND

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Analysed Document: 11- Chapter 4- Overview.pdf (D55776238)
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Submitted By: ambika.patel-museology@msubaroda.ac.in
Significance: 4 %

Sources included in the report:

8- Chapter 1- Introduction.pdf (D55776235)
https://www.indianetzone.com/11/archaeological_museum_chandragiri.htm
https://archive.org/stream/TheMuseumsOfIndia/The+Museums+of+India_djvu.txt

Instances where selected sources appear:

6

URKUND

Urkund Analysis Result

Analysed Document: Chapter 5- Discussion.pdf (D55776239)
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Sources included in the report:

https://b-ok.org/book/823014/19c444
https://www.aare.edu.au/data/publications/2006/kel06039.pdf

Instances where selected sources appear:

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ANNEXURE - III

MOTHER GODDESS

Figurine made of terracotta has distinctive fan-shaped headdress, cuplike attachments on either side of head, wears short skirt and is heavily ornamented.

SURUCHIKA CHAWLA

SEALS

Archaeologists have discovered thousands of seals, usually made of steatite, and occasionally of agate, chert, copper, faience and terracotta.

This is a replica of steatite seal.

SURUCHIKA CHAWLA

TEACHER RESOURCE PACK

ARCHAEOLOGY

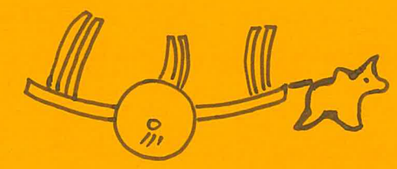
Archaeology is the best tool we have for solving the mysteries of ancient life.

– Richard Panchyk

This teacher resource pack is developed to supplement learning archaeology in a meaningful way.

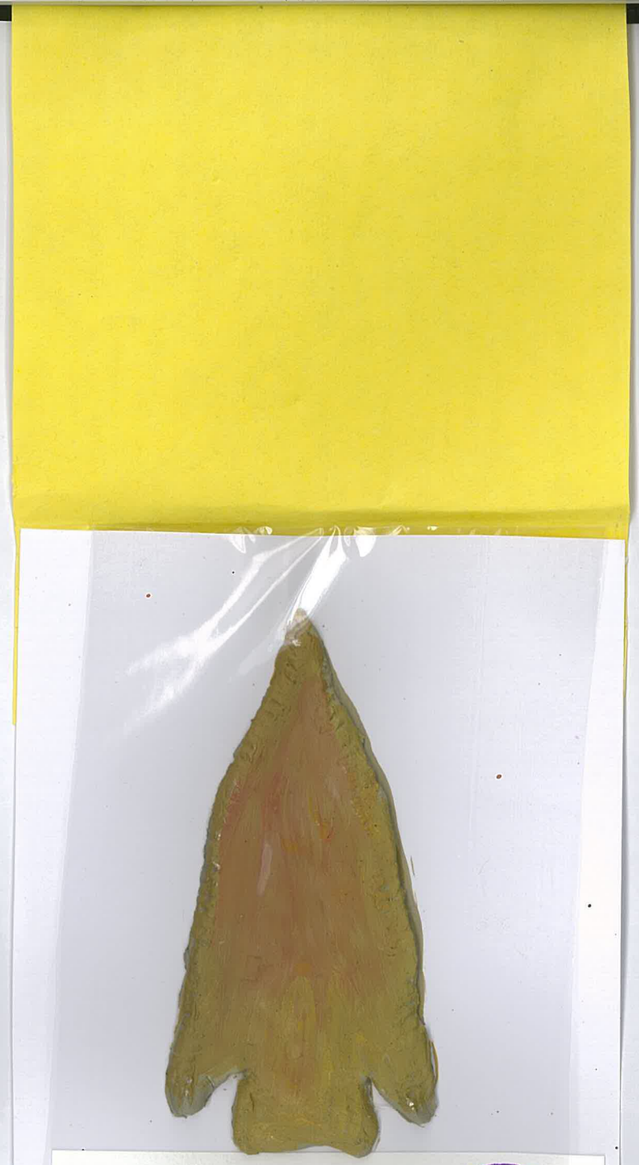
The resource pack contains 2 set of worksheets, 1 envelope on pre-history (including replica of stone tool), 1 booklet on ancient cities, Replica of Mother Goddess and Harappan Seal.

SURUCHIKA CHAWLA



Booklet on

Ancient Cities



SPEAR HEAD
(material - STONE)

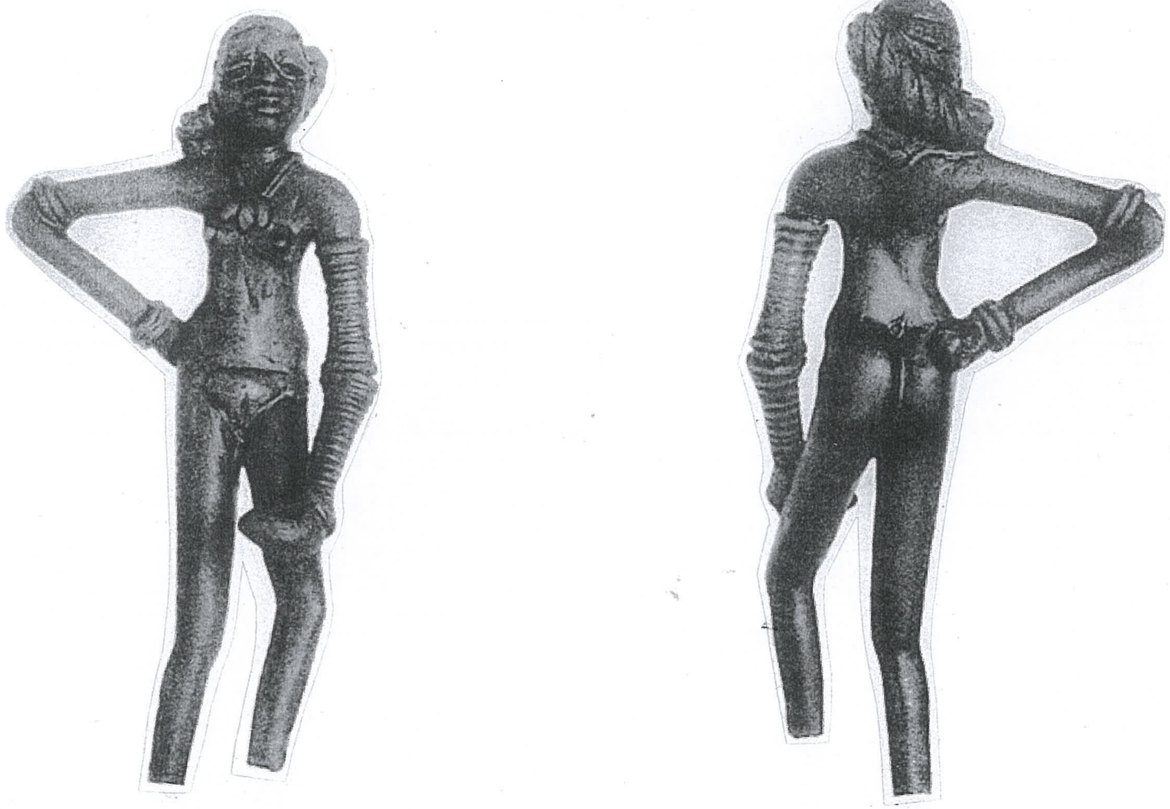
SURUCHIKA CHAWLA

SURUCHIKA CHAWLA

Harappan Ornaments

Below is an image of Dancing Girl. Can you write names of the ornaments she adorns? If you observe from all sides you will find an exclusive hair design also.

Dancing Girl



❖ *You must have observed this figure in the showcase. Can you draw some ornaments which you think Harappans must have adorned? Name them also and guess what material they used to create them.*

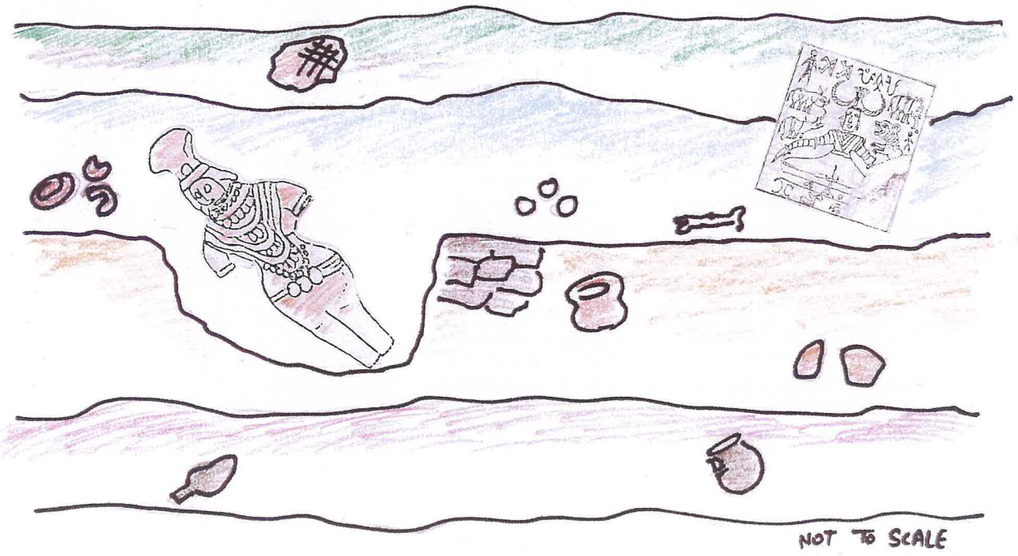
How do archaeological artefacts reach Museum?

Archaeologists dig for clues to picture and interpret how past societies lived. You must have observed artefacts in the showcase of Museum. We find pots, sherds, terracotta figurines, seals, jewellery, stone weights, and many artefacts that give hints of past civilizations. We will understand how these artefacts reached the museum.

Survey	**Documentation**
Excavation	**Conservation & Display**

The process of locating a potential archaeological site initiates with *Surveys* and after proper *Photography* like aerial views of site/ mound, *Excavation* begins that reveals *Stratigraphy* of the site.

Stratigraphy is superposition of layers that form over time. Can you spot the artefacts in drawing below? Circle and name them. These artefacts are displayed in showcase here.



SUMMARY

ROLE OF MUSEUM EDUCATION FOR ARCHAEOLOGICAL LEARNING IN INDIA

The research thesis is an outcome of the effort by the researcher to know how the archaeological collections housed in various museums across India could be used as a source of education especially learning about culture and heritage. Museums can be rightly said as adjuncts to formal educational institutions that cover every possible field of knowledge through its myriad collections and archaeology being no exception to it. Museums have the potential to bring change in educational inputs and supplements in the country which may aid in overall development of children for enhancing knowledge about cultural wealth.

The development of museums in India dates as long back as 1784 with the inception of Asiatic Society of Bengal. Subsequently in 1814 it was established as the first museum of India dealing with archaeology, ethnology and technology. It was only since 1861, in formation of Archaeological Survey of India that archaeology came to the fore in the museum. It is evident from the foregoing that present-day India has different types of archaeological museums, controlled and financed by different categories of administrative bodies ranging from the Central Government to temple- committees. There has been a majority of archaeological collection across museums of India as nation has rich past dated almost 5000 years in antiquity that comprise of artefacts from almost every part of country.

The objectives of research were to estimate the presentation of archaeological heritage in museums and its current utilization as a source of education. The study emphasised on effective learning experiences suiting to the collection of selected museums in India and to see the interactive methods that are employed to attract different segments of visitors towards museums with archaeological collections. Survey of selected/representative museums of different administrative setups, was done for research. This generated data related to the existing potential of the museums and wherever there is absence of regular programs, the best possible use of collection for the learning purpose has been explored and suggested. The practical outcomes achieved or activities executed on the basis of survey, aided in checking the effectiveness of display and collection.

Chapters were formulated as a series of connecting links initiating from chapter one that focused on the aspect of museum as a resource centre for archaeological learning. The research tools and data collected were put into chapter two that emphasised on the collection surveyed and summary of sources and services available at different museums. The third chapter presents empirical case studies conducted by researcher at national & regional level museums and non-governmental organizations in India. Chapter four is an overview of archaeological collection in selected museums of India where in an effort was made to survey and showcase the vastness of regional collections and highlighting the museums' strength to formulate strategies to promote and popularise displays. The final chapter was based on discussion on findings of the study and conclusion of overall works conducted by researcher.

The research is an effort to emphasise on the inclusion of archaeology as a significant field of study at school level. The youth are enthusiastic to participate and learn if they get a hands on approach to see, touch, experience, interpret object at their own time and in their own comfort zone. Children learn through experiences which last a lifetime. Sensitizing towards archaeology should be developed from this stage when they are in schools. Museums in India have collections that hold stories which reflect the 5000 year old past of this region. Study of land and people, food, clothing, shelter, animals, beliefs and values all reflect the continuity of traditions from past to present. The present generation may even adopt a site, with initiative of local authority or school, and be promoter of the significant aspects of that region. This creates a snowball effect for future generations, as many museums and collection is under threat, and may be lost if not properly preserved or taken care of. Archaeology is the only surviving tool that may aid in preserving this invaluable heritage for posterity. Research was an initiative that showed effectiveness of practical participatory approach in developing sensitization towards archaeology even at school level.

The suggestions, resource pack and activities executed or suggested through this research is an initiative that may be replicated in every museum in the country that has archaeological collection. As rightly quoted by Winston Churchill that "A nation that forgets past has no future". The lessons hidden in mysteries of past can be learnt and explored through archaeology and this was noteworthy aim for current research study.